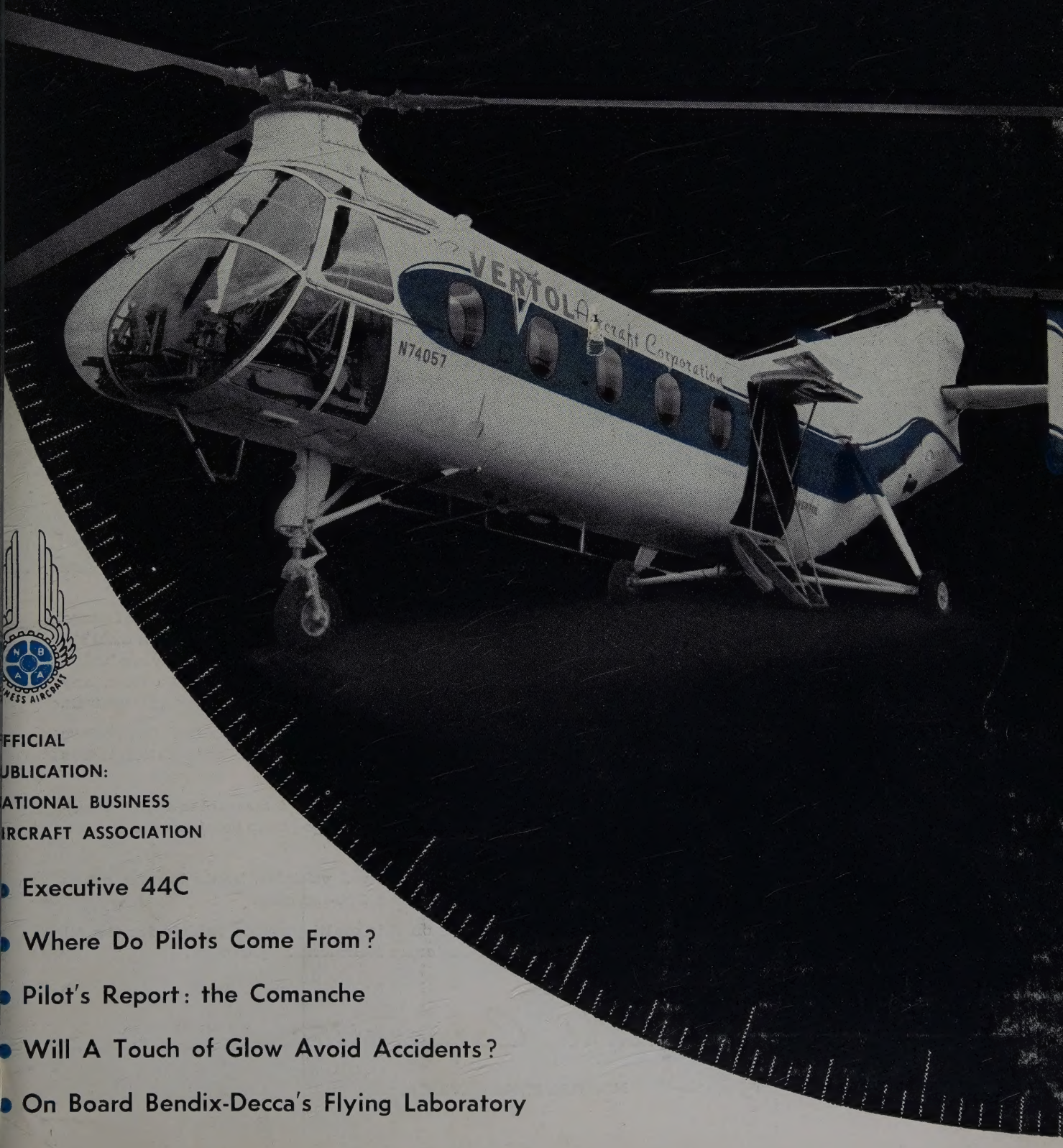
DECEMBER 1957

Skyways

FOR BUSINESS



OFFICIAL
PUBLICATION:
NATIONAL BUSINESS
AIRCRAFT ASSOCIATION

- Executive 44C
- Where Do Pilots Come From?
- Pilot's Report: the Comanche
- Will A Touch of Glow Avoid Accidents?
- On Board Bendix-Decca's Flying Laboratory

Vertol 44 solves transport problem for oil industry

The petroleum industry has a new tool, the Vertol 44 helicopter, to cut manhours, money and misery out of exploratory drilling at remote sites.

The Vertol 44 is a heavy-duty, universal vehicle that makes the sky a 100 mph highway, almost any clearing a landing field. Gone is the need to hack roads in jungle, swamp and mountains. You may need it for these money-saving missions:

Flying Truck: The Vertol 44 carries more than 2 tons of cargo in tropical areas...transports the entire 175,000 lbs. of a drill rig over a distance of 50 miles out and back, in only 56 flying hours. Its 600 cu. ft. cabin accommodates 50% more cargo than any other commercial helicopter, with no problem of load placement.

Flying Bus: Airlifts up to 19 passengers ... 2 typical field crews ...to jungle derricks or offshore drills ... flies exploration teams to otherwise inaccessible spots.

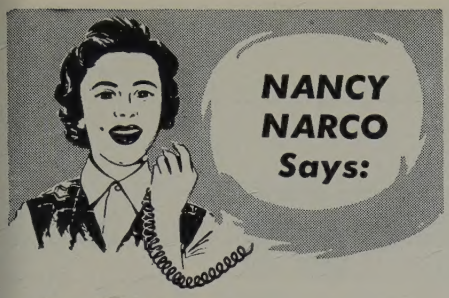
Flying Crane: Hops rivers, ridges and swampland with sling-loads of pipe, rig superstructure, large pump components or even mobile field offices.

Flying Tractor: Frees mired vehicles, hauls barges, drags sledges. It has even towed a 3,000-ton ship.

For more information on this multi-purpose vehicle for the oil industry, write to: Customer Relations Department

VERTOL *Aircraft Corporation*

MORTON, PENNSYLVANIA.



EVER TRIED RADAR?

If you want a big thrill and at the same time want to learn something that may save your neck some day, go out and shoot a radar approach.

Most of the major terminal airports are now equipped with radar and, except during the busiest periods of airline departures and arrivals, the radar crews welcome a chance to do a little practicing, too.

There are two types of approaches available: Plan Position Indicator (PPI), and Precision Approach Radar (PAR or GCA). PAR gives the controller your position and your altitude on final approach with respect to the desirable glide path. PPI is a surveillance radar and only gives the controller your position, with somewhat less accuracy than PAR (GCA), and without altitude information.

To practice a radar approach, get 15 or 20 miles away from the airport, call the tower or approach control and tell them you'd like a practice radar approach if they're not too busy.

If you're proficient on instruments, try it under the hood with a check pilot along.

They'll have you take a prescribed heading or do a couple of turns for positive radar identification. Once this has been established they'll give you a heading, with subsequent corrections, to position you either on downwind or base leg.

With PPI they'll put you on a base leg about six miles out, get you headed toward the runway on final approach and then give you recommended rate of descent for your speed, and tell you when to start descending. As you pass each "mile-marker" on the radar screen they'll tell you what altitude you should have at that point. With PAR they can actually "see" whether you're on the glide path, above or below it, and correct you.

After you've tried a few radar approaches you gain a wonderful feeling of confidence in the system and know that if you get caught on top or in the stuff there's no need to hit the panic button, even if you aren't equipped for ILS.

It also gives you pause to think that some instrument proficiency is the smartest investment you can make. So jump in that Link or get an instrument hood so you can at least learn how to hold a prescribed course and make turns as directed. You can leave the navigational problems to the boys on the ground.

Merry Christmas!

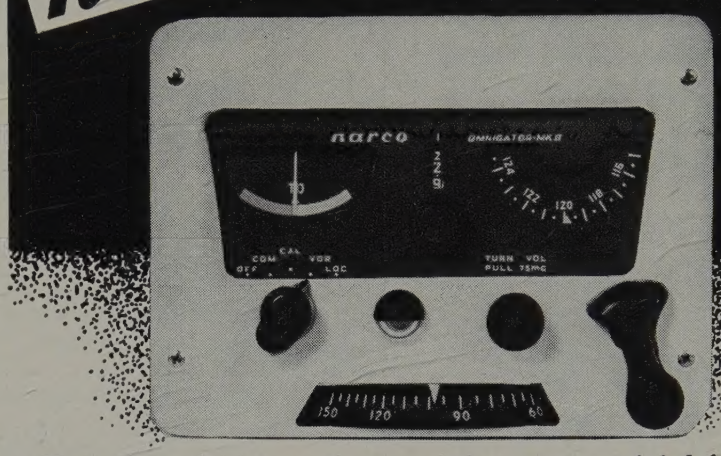
Nancy

NARCO • Fort Washington, Pa.

P.S. If you'd like a FREE Copy of our little booklet "How to Fly Omni," just write me, c/o Narco, Fort Washington, Pa.

FOR VHF NAVIGATION AND COMMUNICATION

narco OMNIGATOR MARK II



More channels, increased transmitting power, tripled band width, whistle-stop tuning, increased speaker output—all these up-to-date features plus many others are offered in the sensational new Omnigator Mark II. Printed circuits plus the most advanced electronic refinements make all this added performance possible in the same compact single-package navigation and communications unit which has made the Omnigator the most popular, the most respected, the most accurate (proved by government test) of all popular business-plane Omnis.

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NO OTHER RADIO GIVES YOU SO MUCH IN A SINGLE, COMPACT UNIT

27 CHANNELS give you ample crystal capacity for all normal communications — VFR or IFR.

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ILS LOCALIZER reception for instrument approaches.

75 Mc MARKER BEACON RECEIVER.

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Plus

BUILT-IN WHISTLE-STOP TUNING!

Pioneered by Narco four years ago, tunes your receiver precisely, positively to your transmitter frequency for simplex communications with towers, control centers, Unicom.

See your Narco dealer or write for new brochure.

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NATIONAL AERONAUTICAL CORP., FORT WASHINGTON, PA.

DECEMBER, 1957

Skyways FOR BUSINESS

The official publication of the National Business Aircraft Association

COVER: Vertol's latest model, the executive 44C.

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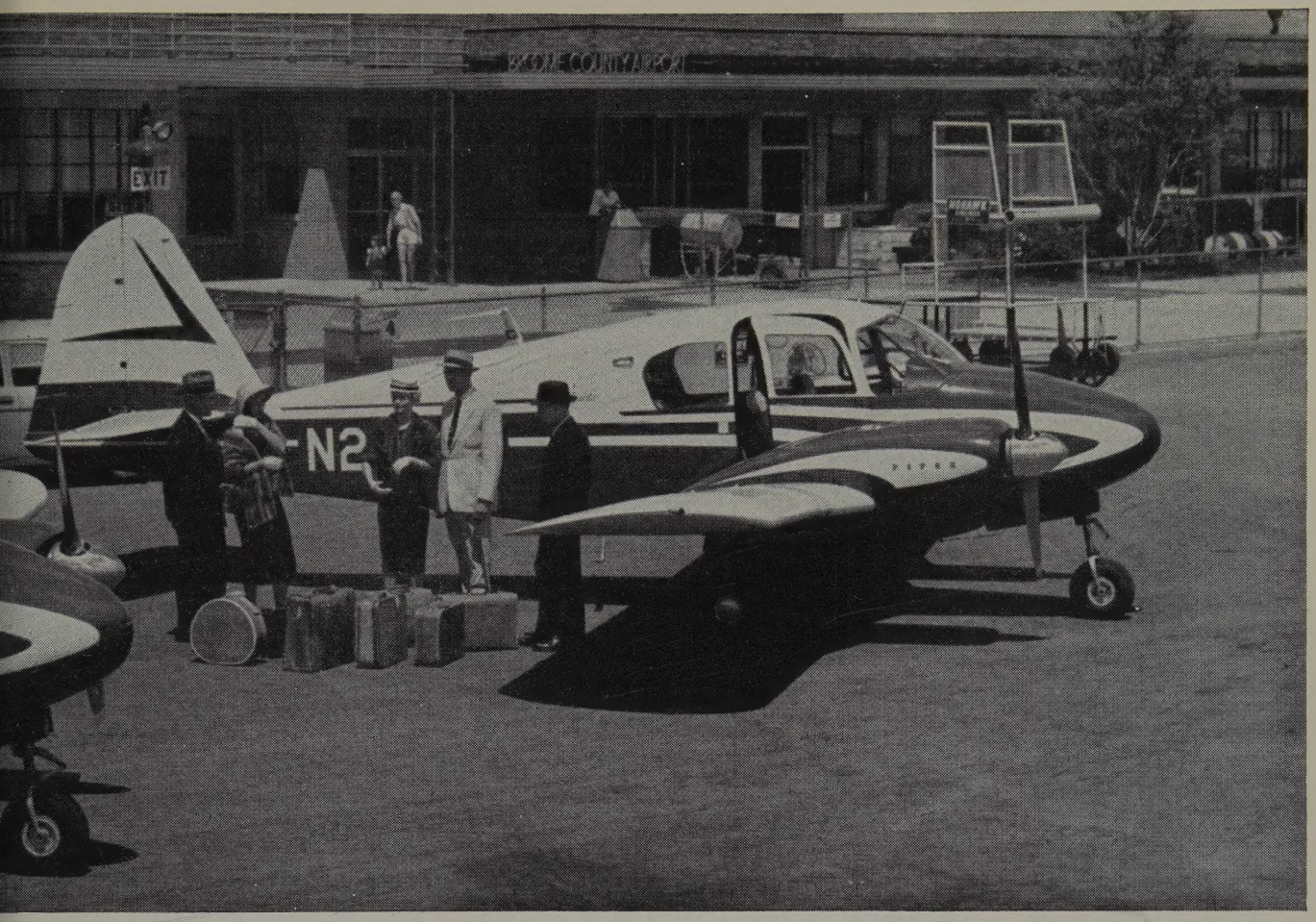

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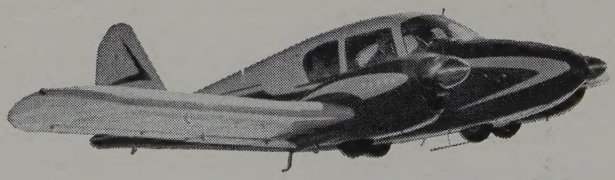
Now the world's most popular executive twin is powered with new, more efficient, high-compression Lycoming 160 hp engines for better fuel economy yet higher cruising speed, better all around performance and nearly 300 pounds of added payload!

The beautiful new 1958 Apache cruises over 170 mph with a whopping 1,570-pound payload, enough weight allowance for five passengers and 108 gallons of fuel (72 gallons in main tanks, 36 in optional auxiliaries) for a range of more than 1,200 miles.

The most thoroughly proven light twin on the market, and by far the most popular, the new 1958 Apache with its increased payload and performance represents more than ever the best possible investment for round-the-clock, night and day transportation with twin-engine reliability. $35,990 standard, completely equipped less radio. See your Piper dealer or write for new brochure, Dept. K-12.



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AIRCRAFT CORPORATION
LOCK HAVEN, PA.

MORE PEOPLE HAVE BOUGHT PIPERS THAN ANY OTHER PLANE IN THE WORLD

Editorial

SAD NEWS

Cessna Aircraft Company's recent announcement of laying down its contemplated program of producing its new 620 pressurized aircraft is sad news for aviation and particularly sad news for business aircraft fleet owners.

Many good and sufficient reasons were given for Cessna's withdrawal from this project. In the light of present economic conditions some of these reasons make very good sense.

To begin with, Dwane Wallace and his Cessna associates showed great courage in conceiving and in bringing the 620 project along as far as they did. It took a lot of Cessna dollars to back this courage. At the time Cessna announced its intention to build a pressurized modern airplane designed wholly for business use, no other aircraft manufacturer had launched upon such an involved and expensive venture without Government backing.

For the last few years several manufacturers seemed willing to build a modern airplane approximating the needs of business, provided they could also sell the model to the Military. But investigation invariably showed that Military requirements and business needs were by no means alike. Without Military backing most manufacturers seemed to feel that the business market alone would not justify the cost of engineering, tooling and producing the machine.

It has always been a bit of a sad commentary on the aircraft industry that it seemed to think in terms of having money on the barrel head before undertaking an extensive venture wtih a modern pressurized business airplane. These manufacturers have been different from most other American producers who work wholly without pre-arranged Government financing. It is unfortunate that the first manufacturer with courage enough to stick its neck out in the production of other than a light personal aircraft, has had to throw in the sponge.

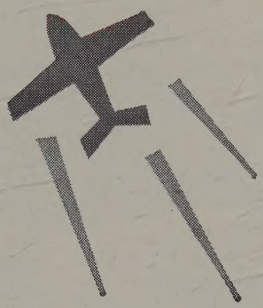
One of the reasons that Cessna gives for not going through with its 620 project is the fact that airlines will be releasing pressurized airline equipment which may be bought by business operators as cheaply, if not cheaper, than the cost of a new 620. We have talked with many business fleet operators who do not think that this reason holds water. The men with whom we have talked seem to think that very few business organizations will be interested in cast off pressurized airline equipment even though they can get such aircraft, modify and refit them to their needs for about the same price as a new completely fitted 620. The reasons they give include: (1) high operating costs, (2) an airplane entirely too large for their needs, (3) aerodynamic obsolescence, (4) short range, and (5) inability to operate in and out of short fields. One informer pointedly states that no business man with sound judgment would buy a forty ton drop hammer to drive a tack. He thinks that inasmuch as there are few companies needing more than ten or twelve seats in a business airplane, most companies will manifest hesitancy to buy one designed to haul forty passengers.

We expect to hear it said that the 620 was destined to fail because it was designed for piston engines and because its speed was only 250 miles per hour. This, we doubt because it is impossible to produce a turbine powered pressurized aircraft with 350 mph or better speed at any where near the price that the 620 could be produced. There is said to be a substantial business market for a pressurized modern aircraft that will cost *less than* $500,000. Cessna's 620 meets this requirement. Price is a major factor in the purchase of an aircraft. *As the curve of initial purchase price goes up, the curve of the number of potential customers can be expected to proportionately descend.* This is not to say that there is not also a business market for longer range, faster airplanes that will cost close to $1,000,000. Business men believe there is. Business certainly needs a modern airplane in the one-third to one-half million dollar class as well as one in the three-quarters to one million dollar class.

As to the piston engines and 250 miles speed of the 620, it seems universally conceded that piston engines will be with us for another ten or fifteen years; and speed of four miles per minute is not to be sneezed at and will be considered acceptable for many years to come.

Cessna's withdrawal of its 620 from the business market leaves no replacement of a modern tricycle gear, pressurized aircraft for the present day Lodestar class. One of these days a lot of tired Lodestars will have to be replaced. Not all present Lodestar owners can afford Jetstars, or Gulfstreams, or Friendships, (all of which are also needed and should find ready sale) and those who cannot may well hesitate a long time before they buy the forty ton drop hammer to drive their tacks.

The passing of the 620 is a sad note. We wish it weren't so.



TINY TOWN OR MIGHTY METROPOLIS *Esso is there . . . at 600 airports from Maine to Texas!* Leave it to those Esso Aviation Dealers . . . to give your plane the knowing kind of service it needs to keep you right on schedule. With an Esso Aviation Credit Card (they're easy to apply for), you can charge almost anything—including gasoline, oil and lubrication (you can't beat those Esso Aviation products) and even tire and battery service, landing fees, overnight in-transit storage and minor emergency repairs. How's that for a good deal?

FREE TO PILOTS! For your free Esso Flight Calculator, handy guide in figuring True Course, Drift Angle and Ground Speed, be sure to see your nearest Esso Aviation Dealer.

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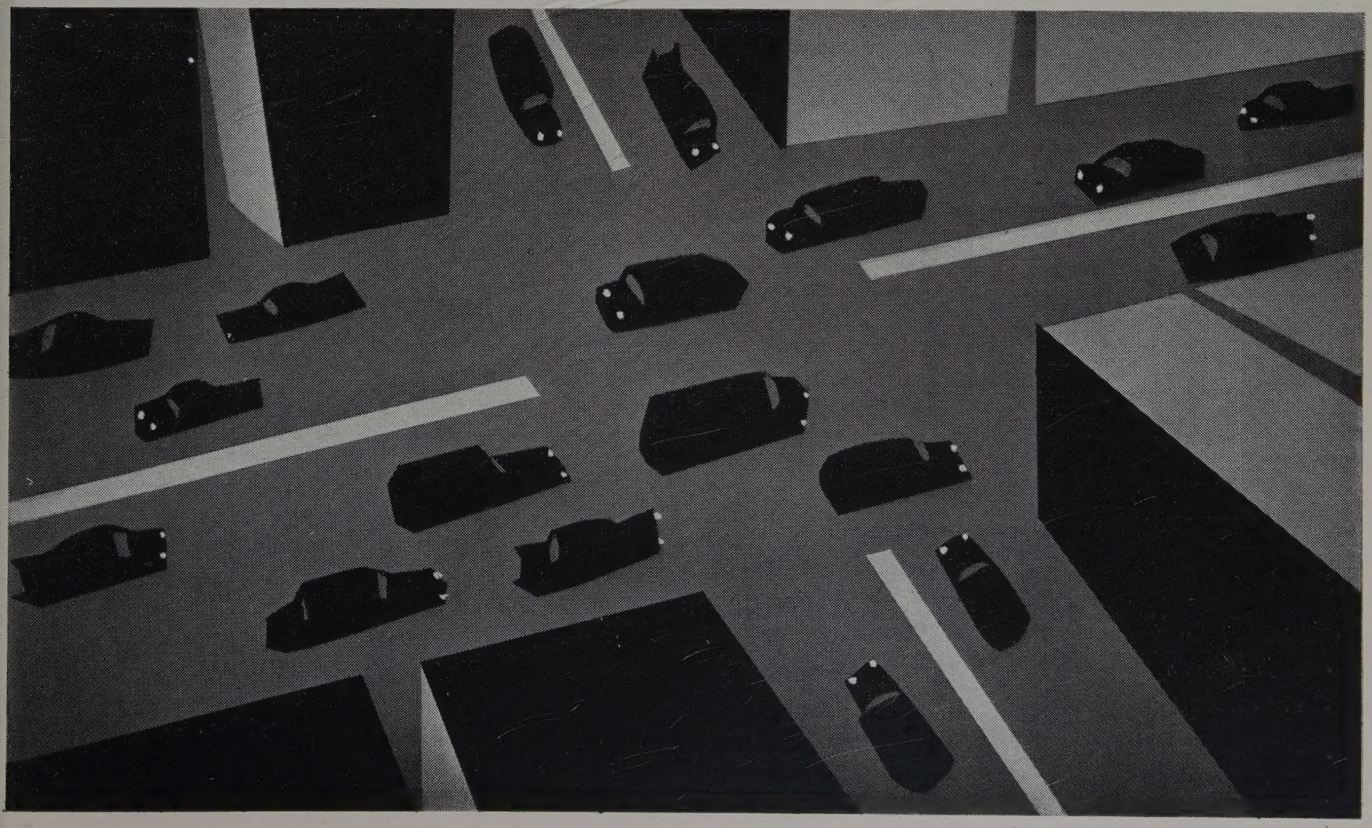

AIR YOUR VIEWS

Dear Editor:

An attempt is being made to locate "old timers" from Hancock College, Santa Maria, Calif., for a reunion to be held early in 1958.

Any reader who attended this pioneer aviation college of the west between the years 1929-32, please contact Al Horning, 3914 Sierks Way, Malibu, Calif.

Looking forward to reuniting. . . .

Al Horning

Dear Editor:

The NBAA editorial re Military Domination in your October issue of Skyways is very thought provoking, and I would like to congratulate you and NBAA on this stand.

I would suggest that you distribute reprints of this editorial to all key persons in Government who are interested in this air traffic problem and its early solution.

With every good wish.

Sincerely,
Beverly Howard, pres.,
Hawthorne School of
Aeronautics, Moultrie, Ga.

Dear Editor:

Would like to thank you for the writeup on page 75 of the September issue.

On the questions posed at the end of the column on auto-control of an airplane in an emergency, Safe Flight has not considered this problem from an engineering point of view. Rather, we have concentrated our complete effort on the control of the plane in the critical last few minutes of flight prior to landing and the necessary control at low speed on take-off. This is the flight area of particular concern to the aviation industry, since statistically it produces more than 40% of all accidents.

So, first things first. Let's cut the landing and take-off accidents down as closely as we can to zero by a good simple solution to the major problem, and then get on to the refinements.

By the way, our Speed Control instrument is the new name for the former Landing Speed Indicator.

Allan B. Heinsohn
Safe Flight Instrument Corp.
White Plains, N.Y.

Dear Editor:

Could you please oblige me with information regarding the Wilton Radio Aid to aerial navigation? When was it established? how does it operate? what are its functions? what airways does it guide? the termini of each? and lastly, what airways pass over Ridgefield and West Redding?

I shall appreciate your courtesy very gratefully. And with my thanks in advance.

Sincerely yours,
Fred'k A. Spolane

(Our replies to Mr. Spolane's questions are as follows. First, it is the Wilton Visual Omnirange (VOR) system, established May 23, 1951. It operates on a radio frequency in the VHF band, 108-118 mc. Two radio signals are emitted. One is fixed at magnetic north, the other rotates through the full 360 degrees of azimuth. VHF receivers in aircraft are tuned, and circuits arranged, to detect the difference in the signals and interpret the difference to give a magnetic bearing of the aircraft receiver from the emitting station. Since there are unlimited (omni-) numbers of these bearings being transmitted, the pilot can adjust his instruments to locate any "radial" with respect to his position and navigate in relation to the station or any desired course "to" or "from" the station.

Function of the station is to transmit navigational information to pilots of aircraft by means of visual information on a cockpit indicator so that the pilot can make good a desired path over the ground without visual reference to the ground. Also, it acts as a communications link from airplane to ground stations to provide the pilot with operational information necessary to safe flight.

The system's airways and the terminus of each are Victor 1, Charleston, S.C., to Wilton, Conn.; V3, Key West, Fla., to Presque Isle, Me.; V34, Rochester, N.Y., to Wilton, Conn.; V91, New York City to Montreal; V123, Washington, D.C., to Wilton, Conn.; V126, Chicago to New York City. According to the CAA, these airways pass over Ridgefield and West Redding.)

TO CONSERVE OUR AIR SPACE RESOURCE...

the **Bendix**

Decca Area-Coverage Navigation System

. . . provides all essential requirements for air traffic control:

- Accurate definition of any proposed "block structure."
- Introduces urgently needed safe lateral separation for accurate tracks in the sky.
- Complete area-coverage from the ground up — no altitude limitation.
- Exclusive Bendix-Decca Flight Plotter displays instantaneous exact position.
- Intricate approach and departure paths are simple to fly.
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- Complete navigational security for helicopters.

Bendix-Decca, originally developed in the United States, is the low frequency area-coverage navigation system. It is the only proven, extensively used system in the world. Growth potential allows unlimited automatic air traffic control improvement.

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Bendix Aviation Corporation
NORTH HOLLYWOOD, CALIF.

NBAA . . . Director's Notes

Lockheed engineers are burning! Their 10-passenger Jetstar is accused of being copied from the French Caravelle because of the rear fuselage mounted jet engines.
Actually, the Burbank boys insist, their design was submitted to the Air Force more than five years ago and turned down because *it wasn't practical* . . . according to the Air Force brains.

* * *

Proposal that all airway traffic control communications including pilot position reports be made in Greenwich Mean Time is being looked at by CAA.
For the pilot it would mean setting his chronometer on GMT and not having to worry about local time zone changes . . . very simple.
For general aviation it would mean indoctrination of their ground personnel to translate messages received regarding ETA's into local time . . . not quite so simple.
Problem is not insurmountable . . . it could also be solved by a simple addition to the data transmission machinery being set up by CAA . . . which means more money spent by CAA which could well be spent on more and better navigation aids, radar, personnel or facilities.
Business aviation's comments are solicited—send your opinions to NBAA for transmittal to the CAA offices.

* * *

Is positive control of *all* aircraft at *all* altitudes through the use of surveillance radar and two-way radio feasible and practical?
Long-argued and often recommended by some governmental committees and some pilot groups, the system will be put to a test this January if plans now being formulated at Andrews AFB are completed.
Using an area east of Washington, south of Baltimore and bounded by the Chesapeake Bay on the east and Potomac River to the South, the Air Force —with the cooperation of all civil users—plans to run a 60-day experimental program.
Purpose is not to "prove" anything, but to evaluate the actual workings of such a system.
Control area includes military and civil airports, civil airways, caution areas and hitherto uncontrolled airspace . . . which will provide almost every type of control situation now existent.
The experiment which has the approval of CAA should go a long way in providing factual knowledge for both proponents and opponents of the system to consider.

* * *

Acceptance of the Grumman turboprop Gulfstream, by the business flying market has been, according to reliable reports, most amazing. Grumman isn't confirming, but more than a dozen serious proposals have been received—some with serious cash on the line.

* * *

One of the highest compliments NBAA has received in a long time was the fact that busy CAA Administrator Jim Pyle voluntarily stayed over at the NBAA Annual Forum to attend the panel meeting on the CAA's Business Flying Program.
So enthusiastic was Jim Pyle about this program—which needs the full cooperation of all business pilots and managements—that he not only sat in at the meeting but also offered his valuable comments from the floor.
What greater recognition of business flying's maturity could you ask for? And, it's up to us to see that we continue to merit such recognition.

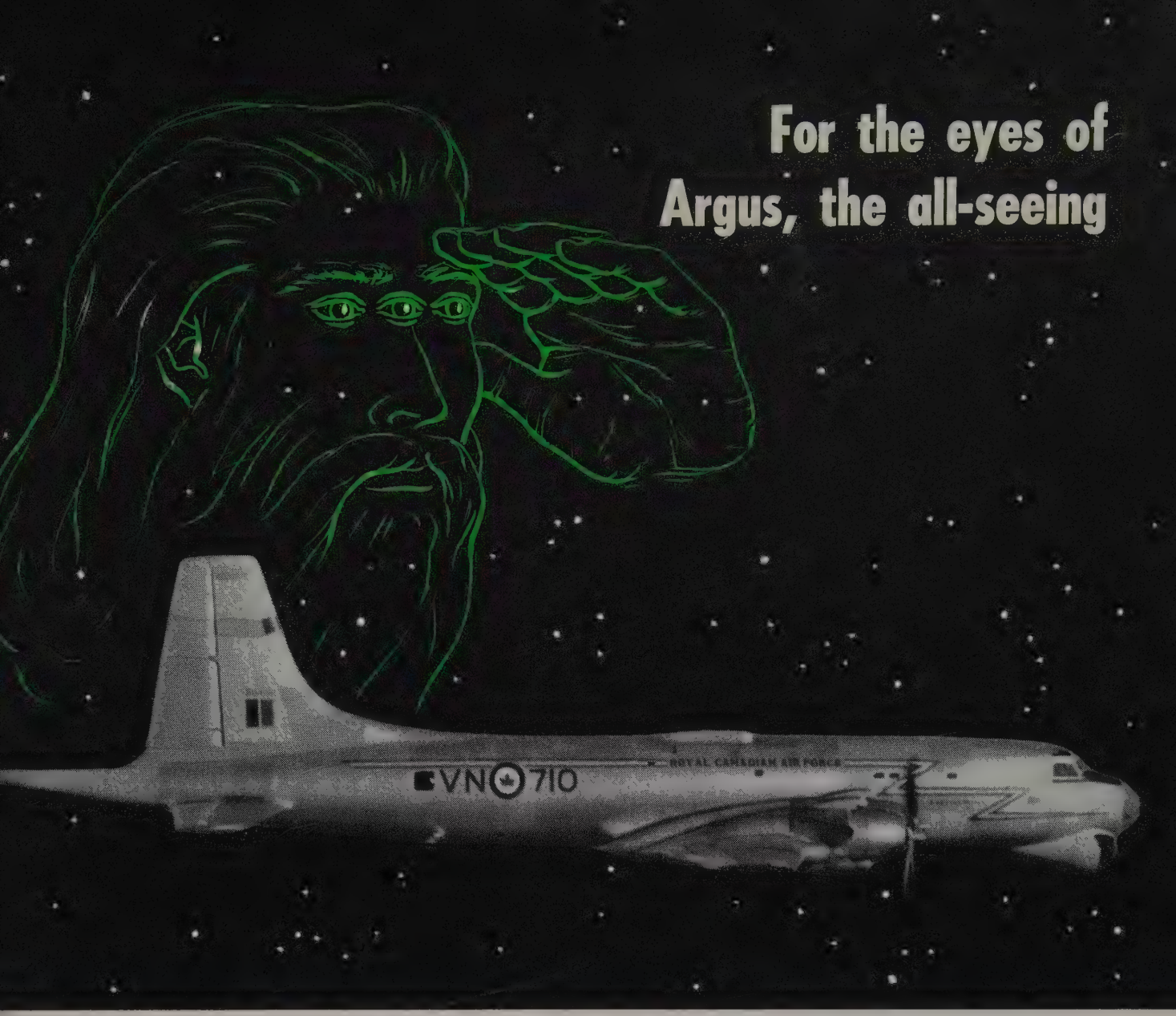
Suite 344

Now that everyone has recovered ?? from NBAA's Tenth Annual Meeting and Denver's cool, refreshing mountain air—and the "foreign" flu, and ALL (I repeat) ALL business aviation problems worked out?? with the CAA, Air Traffic Control, Airport Operators Council, Military, Airways Modernization Board, turbo-prop and turbo-jet manufacturers, Company Managerial and Operational Policies, Weather Flying and the Business Aircraft, let's get back to the new problems coming our way.

Let me at this time, in my own small way, on behalf of the Board of Directors of NBAA, say "thank you" for making this meeting our best ever.

Your Board of Directors held the October Board Meeting in Denver, Colo., immediately following the Annual Membership Business Meeting. Those present: Joseph B. Burns, Pres., representing The Fuller Brush Co. (and reelected president for another year); Gerard J. Eger, Treasurer, representing International Harvester Co. (elected Executive Vice President and reelected Treasurer); B. J. Bergesen, representing Ford Motor Co.; Henry W. Boggess, representing Sinclair Refining Co.; James Ketner, Jr., representing Texas Eastern Transmission Corp.; Walter C. Pague, representing ARNCO Steel Corp.; Ralph E. Piper, representing Monsanto Chemical Co.; also John Winant representing Sprague Electric Co. and E. M. Beattie, representing General Electric Co.

(Continued on page 32)



radomes by McMillan . . . developed and delivered to meet Canadair's roll-out date (scheduled 2½ years before)

Named ARGUS after the "watchful guardian" of Greek mythology, Canadair's CL-28 carries the most comprehensive collection of electronic and other detection equipment ever assembled into one aircraft for locating, tracking and "fixing" enemy submarines. It has a number of radar "eyes".

The radomes for these "eyes" were developed by McMillan Industrial Corporation.

For the forward antenna, McMillan developed, manufactured and tested one of the largest radomes ever built — measuring 16′ long x 8′ wide x 8′ deep. Tremendous in size, this radome had to be designed to be lightweight yet meet rigid electrical, environmental and structural requirements.

Whether your problem is that of a small, accurate missile radome, a mammoth aircraft radome or a ground radar system, you can benefit from McMillan's sixteen years of experience in design, manufacture and testing of all types of radomes.

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BROWNVILLE AVENUE • IPSWICH, MASSACHUSETTS

Aviation Roundup

COLORADO SPRINGS, COLO., planning new civil airport. No instrument landing aids are planned at present for the new facility, according to the report.

★ ★ ★

MANUFACTURING TRICKS NEARLY EXHAUSTED, says Maj. Gen. William O. Senter, Air Material Command's Director of Procurement and Production, Dayton, O. Speaking of nation's defense producers, he adds that we must overcome the "know-how barrier" in building the coming generation of aircraft and missiles. "Revolutionary" Air Force requirements for advanced aircraft and guided missiles are forcing a comparable revolution in manufacturing techniques, the General points out.

★ ★ ★

ITALIAN "AL MERITO DELLA REPUBLICA" MEDALS awarded two CAA and two CAB employees by Italian Government "as a recognition of their efforts toward an ever-increasing cooperation between the CAA, CAB and the Registro Aeronautico Italiano." Recipients are W. H. Weeks, chief of Aircraft Engineering Div., CAA; Raymond B. Maloy, director of Office of International Cooperation, CAA; W. E. Koneczny, chief of Airworthiness Div., CAB Bureau of Safety; and John M. Chamberlain, then associate director of CAB Bureau of Safety. Award is highest given by Italy.

★ ★ ★

LATEST RADIO FACILITY CHART covering northeastern United States and southern Canada completes coverage of the U. S. under new series format, Rear Admiral H. A. Karo, Coast and Geodetic Survey director, announces. The chart series represents latest advancement in depicting complete radio information for safe enroute instrument navigation. The chart is designated RF 31 and replaces RF 6.

★ ★ ★

DC-3 WITH ROOF WINDOW owned by Garrett Corp., attracted much attention at San Francisco International Airport (Calif.) when flown in by pilot-designers Paul Hettinger and Jack Womack. The new overhead section consists of three separate panels of lucite, about 400 square inches each. The two panels on either side are curved to fit the "Green Hornet's" contour. Center panel, almost flat, doubles as escape hatch. Designers figure the 1200 square inches of extra glass allow 15% additional visibility.

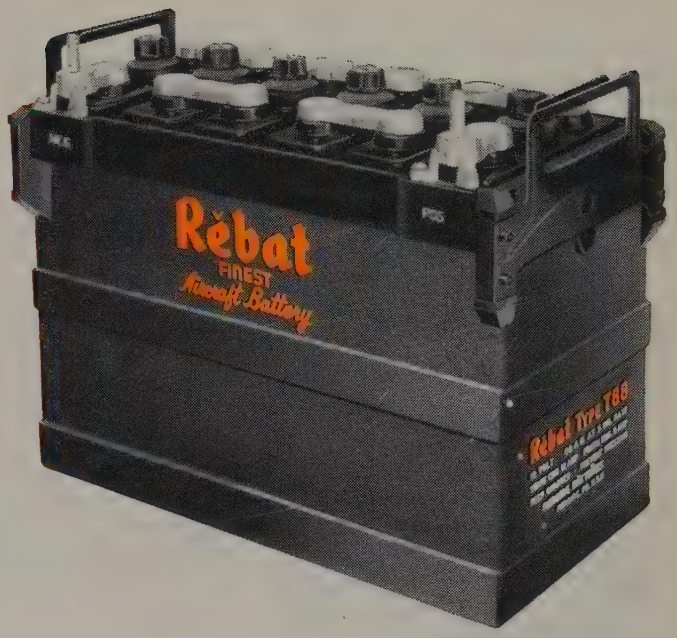
★ ★ ★

AERONAUTICAL CENTER PROPOSED at Los Angeles, Calif., adjacent to Ambassador Hotel. New development, known as Ambassador International, calls for multi-story office building with heliport. Occupancy projected for 1960-61. Its becoming a reality, contingent upon aviation groups, business, taking space.

★ ★ ★

TAYLORCRAFT, INC., announces acquisition of assets of Poe Machine and Engineering Co., Inc., New Wilmington, Pa. Plant handles wide range of jobs from small tool machining to 84-inch boring mill operations. Total floor space, approximately 20,000 feet.

Air-India International
Alaska Airlines Inc.
Allegheny Airlines
Bonanza Airlines
Braniff International Airways
Capital Airlines
Central Airlines Inc.
Cordova Airlines Inc.
Eastern Air Lines Inc.
Lake Central Airlines
Linea Aeropostal Venezolana
Linee Aeree Italiane



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Aviation Roundup

NOISE SUPPRESSORS FOR ROLLS-ROYCE Avon R.A. 29 jet engines, fitted to De Havilland Comet IV, being measured for sound by Port of New York Authority. Object, DeHavilland wants to operate Comet at New York International Airport. Avon engines, already noted for relative quiet, claimed to be more quiet than many of today's transports. Suppressor is corrugated nozzle-like fitting.

★ ★ ★

FIRST FAIRCHILD F-27 is scheduled to roll out this month with airline deliveries starting in March, the company announces. West Coast Airlines will receive the first 40-passenger F-27.

★ ★ ★

BRITANNIAS AT L. B. SMITH Aircraft Corp., Miami, Fla., for new seats before final leg of flight to Mexico City. Bristol Aircraft's "Whispering Giant" to be a 94-seat configuration. Goes into service this month with Aeronaves de Mexico.

★ ★ ★

DOUGLAS EMPLOYEE REDUCTION to be completed this month with a total release of 1,200 persons from the El Segundo Div., Calif. Report indicates release of 1,000 shop workers, remainder office and clerical employees.

★ ★ ★

WHO'S NEW: C. Douglas Flanigan appointed chief engineer, Lycoming Div., AVCO Mfg. Corp., Stratford, Conn., and C. H. Buddenbaum to works manager at Williamsport, Pa., plant . . . George F. Rice named chief engineer, Garrett Corp.'s AiResearch Aviation Service Co., Los Angeles International Airport, Calif. . . . Walter Newcamp appointed new products manager, Specialties Div., Curtiss-Wright Corp., Wood-Ridge, N.J. . . . John R. Dickinson named assistant to president, Jeppesen & Co., Denver, Colo. . . .

W. L. Hawks named district sales mgr., San Francisco, Calif., office, Pacific Scientific Co. . . . George J. Torpey, to flying sales staff, Aircraft Radio Corp., Boonton, N.J. . . . Dana Bollar appointed vice president, charge of sales, Rotor Craft Corp., Glendale, Calif. . . . Bert R. Gordon, to sales manager, Light Plane Div., Trade-Ayer Co., Linden, N.J. . . . William O. Boschen named general manager, Avien, Inc., Woodside, N.Y. . . . W. T. Noll named manager, production-personnel-procurement, and C. L. Davis named manager, sales-planning-research, both with Aeronautical Div., Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

★ ★ ★

DATELINES . . . Dec. 6-7, Montana Aviation Trades Assn. Annual Manufacturers Meeting, Havre, Mont. . . . Dec. 6, Air Force Assn. Annual Group Party, Statler Hotel, Los Angeles, Calif. . . . Dec. 17, 54th Annual "Kitty Hawk Day" Anniversary, commemorative programs to honor Wright Brothers' first heavier-than-air powered plane flight . . . Dec. 16-18, Air Traffic Control Symposium, "Missions and Methods of Airways Modernization Board," Franklin Institute Laboratories, Philadelphia, Pa. . . . Jan. 22-26, International Air Show and Exposition, Miami, Fla., sponsored by Sertoma Club . . . Jan. 23-25, Agricultural Aircraft Assn. Convention, Bakersfield, Calif. . . . Jan. 27-30, Plant Maintenance and Engineering Show and Conference, Chicago, Ill.

44C – Vertol
Ten-Passenger
Executive Helicopter

Vertol Aircraft Corp.'s new ten-passenger executive design helicopter, model 44C, has "almost unbounded" applications for business use as well as for commercial missions, says Don R. Berlin, the firm's president.

The cabin has five swivel armchairs, a lounge seating three, a desk and chair, lavatory, radio and an attendant's seat.

The helicopter has a 100 mph cruising speed and a maximum range of 300 miles.

Price tag is about $300,000 completely equipped. This includes a custom-tailored interior. Color scheme of the demonstrator's interior is in tones of tan accented by gold. Davenport and armchairs are upholstered in a nubby material of rose-beige. The other seats are soft tan leather. Cabinet work is in limed walnut. Carpeting is beige deep pile.

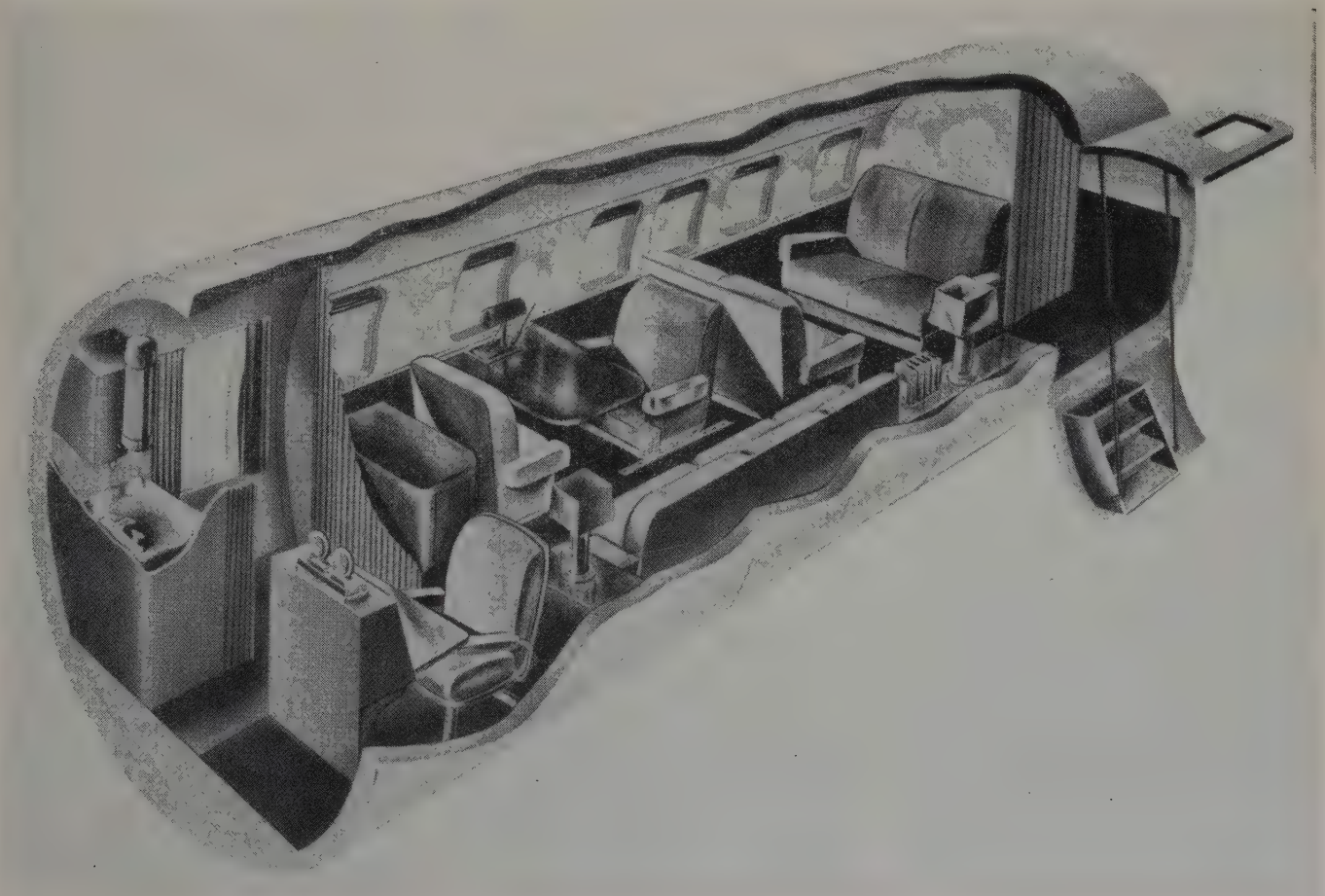
Evolved from the famous H-21 Work Horse, the Vertol 44C is a production helicopter available immediately.

The plush interior does not deter from the 'copter's ability to be utilized in a secondary role as company "work horse."

It offers large companies with widespread interests the flying office that can carry businessmen and their clients or associates to their bases of operations rather than from airport-to-airport with no time wasted.

Because this latest version of the H-21 capitalizes on its predecessor's operational experience it brings to its users greater payload capacity, increased performance and new versatility.

Systems and components of the executive 'copter are designed for simplicity, maximum accessability and long service life. Many access panels facilitate inspections and maintenance.



Airspace Segregation and Air Traffic Control

By James T. Pyle
Administrator of Civil Aeronautics

Excerpts from a talk made at the Fall Assembly of Radio Technical Commission for Aeronautics.

The application of airspace segregation as air traffic control tool is not new. It has been applied by the CAA in varying degrees and with excellent results for over 20 years. The Visual and Instrument Flight Rules are the best known examples of segregation. Segregation has been employed in other forms as well over the years through regulations or by circumstances resulting from natural causes as the number of aircraft and their speeds have increased. We now have restricted and prohibited areas, designated control areas, the air identification zones, traffic patterns, one way airways and in fact the airways themselves. All these are forms of segregation of air traffic and airspace. We have learned to live with them all.

The various users of the airspace have accepted this degree of segregation over the years in recognition that the common good far outweighs the inconveniences caused by the application of these types of segregation. I can go even further than that and say that it is the experience of the CAA in its contacts with airspace users that they generally are not opposed to segregation of activities or certain types of aeronautical activities. They are concerned though, and rightly so, over who gets segregated from whom and whether or not their own type of activity is discriminated against in the process.

The need for segregation arises from a number of factors. The principle of "see-and-be-seen" as a method of achieving safe avoidance of other traffic is falling into bad repute where high performance aircraft are concerned. Factors of cockpit visibility, weather conditions, altitude and others enter into the picture, but the end result is the same—there is a growing, urgent requirement for more positive separation to be applied by the ground control agency.

Aircraft that cannot cooperate cannot mingle with those wanting and needing positive separation, or the separation is destroyed. The answer is to set aside certain airspace for those aircraft capable of cooperation with the ground, and provide full-time positive separation in this airspace. In other airspace, traffic can be separated as it is today—on a see-and-be-seen basis or by control from the ground, depending on the weather. There will undoubtedly continue to be some airspace where no control is exercised, as there is today.

Our idea is that in order to move fast, heavy traffic without delays and with maximum safety, there must be standardization of flight maneuvers and consolidation of like activities, as well as all of the improvements in navigation, position fixing, communications and the other elements on which more efficient air traffic control is dependent. At the same time, consolidating and controlling the activities of this type of traffic provides a greater measure of safety for the slower, less well-equipped aircraft which wants to and can rely on the see-and-be-seen principle.

Basically, the problem is to determine the requirements of the airspace users, as to the amount of control they believe is necessary, and they can equip themselves to handle. These requirements will vary from a need for continuous positive separation of all aircraft to no control at all other than that provided by a minimum of regulation.

In many areas these requirements can be met with little or no conflict because aircraft users having varying requirements do not mingle extensively in the same airspace. There are, however, areas where all types of traffic mingle extensively, and these are the areas wherein the problems lie. Here we must either find an equitable way of dividing the airspace or accept some compromise in the positive separation concept.

In attacking the problem of how to divide the airspace, we must consider how to provide readily distinguishable boundaries defining the positively controlled areas so that unknown, nonparticipating aircraft will not encroach upon them.

In the aircraft altimeter we have a universally utilized instrument which provides the means to designate such a boundary. For example, if all aircraft desiring flight on a controlled basis were to operate within certain altitude strata, and all others would remain outside these strata, a working basis would exist for positive separation of the aircraft desiring control service.

Restricted visibility at high altitude and lack of reference points require that the pilot spend a great deal of his time observing his flight instruments. It is at these high altitudes that flight conditions exist which require that aircraft be separated by a ground agency if maximum safety is to be achieved.

Below the floor of this high altitude area the problem is infinitely more complex. Here we have high density terminal areas and high density routes interconnecting them. Safety requires that high performance aircraft operating in these areas be provided separation by the ground control agency. On the other hand, in these same areas there is invariably a high concentration of aircraft not desiring or not able to participate in the full control system. The division of airspace on a 3-dimensional basis in these areas creates a far more complicated boundary definition problem than in the case of simple division by altitude.

Defined limits can be published on maps and charts, and an extensive education campaign undertaken to help assure that nonparticipating flights stay in the areas set aside for them, and that aircraft desiring positive separation remain in the channels established for them. This problem could be minimized if the boundaries followed natural lines easily identified from objects or installations on the ground. Investigation also has to be made of electronic means of defining limits.

Further, it is necessary to consider means to allow aircraft to proceed between altitude-segregated airspace and geographically segregated areas, for example, to receive positive air traffic control separation while descending from a high altitude area to the airport surface at a high density terminal. This will involve definition of flight paths in the vertical dimension so that *tubes of airspace* can be set aside for the various types of operations.

It seems basic, however, that the airspace reserved for positive separation in the lower areas will be held to a minimum. In the first place, the airborne equipments that will be required to fly in positively controlled airspace will permit aircraft to navigate with maximum accuracy in narrow corridors. Secondly, the ground environment required to control traffic on this basis should make it possible to move a high volume of traffic within a relatively confined area.

This will tend to leave adequate airspace for "see-and-be-seen."

The problem of segregation at the airport itself is a most complex one. The elimination of one or more classes of users from a public airport, supported by public funds, is unlawful. In many areas, furthermore, the creation

(Continued on page 38)

The Comanche — Piper's Newest

by Lindy Boyes

Piper Aircraft's new bid to the single-engine executive-business plane field is the four-place Comanche, PA-24. The much talked-about model, originally scheduled for production last May, is a reality at last . . . and well worth the waiting.

At a price of $14,500 for the standard model, the Comanche may be just the model plane many business men have awaited either as their first company-owned plane or as their first small-plane-for-sales in addition to an already-established fleet of "big" planes.

Skyways was invited to try the plane on a day-long cross-country flight from Flushing Airport, Long Island, N. Y. Public Relations man for Piper, Bill Strohmeier, was the demonstration pilot.

Most unique item in looking at the plane is the Sabre-jet-appearing swept vertical stabilizer. Closer inspection reveals that the horizontal stabilizer is one movable surface, or stabilator. (The stabilator is installed on most modern jet fighters and results in a reduction of approximately 20% in area with resultant saving in weight and drag.)

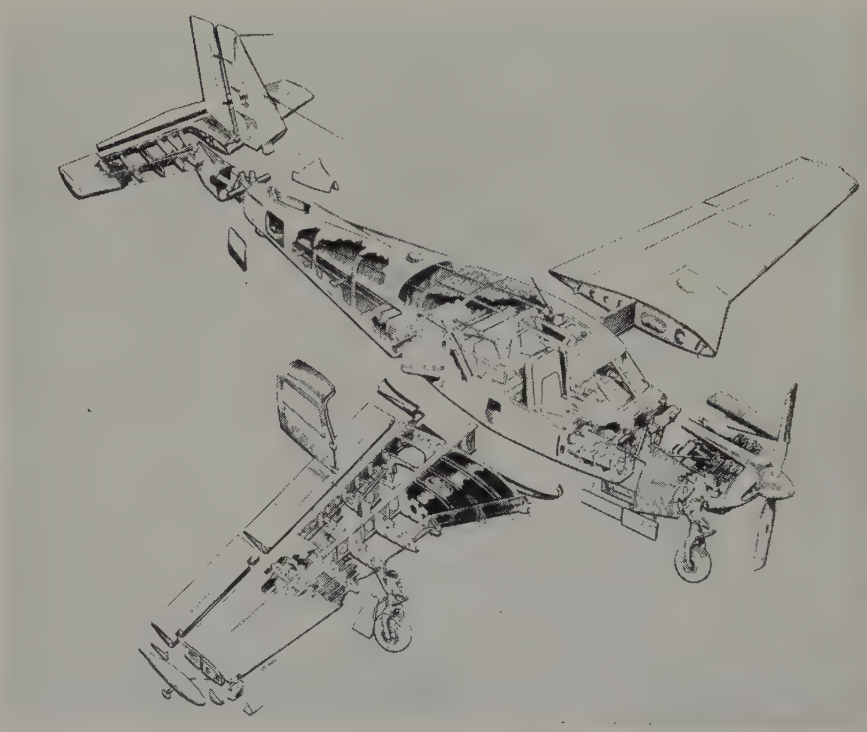
The pre-flight check of the all-metal plane showed interchangeable left and right wing ailerons; a long, sloping nose; a special Hartzell constant-speed, controllable propeller, designed with short, wide blades to give substantial ground clearance; a nose wheel the same size as the main gear wheels using the same size tire, 600x6; a swept-wing root for better air flow at slow speeds; laminar flow wing; and the stabilator with a self-compensating trim, or stabilator, tab.

Fuel tanks are two 30-gallon rubber cells, one in each wing. Maximum capacity is 60 gallons; standard supply is 50 gallons. Normal consumption is ten gallons per hour.

Inside the cabin, a spacious quality (44½ inches across) is apparent immediately as well as long sweeping-view windows that give an essentially uninterrupted view from the back of the rear seat forward. Baggage is carried in a separate compartment aft of the rear seat. It provides 20 cubic feet for 100 pounds. A separate outside baggage door measures 20x20 inches.

Suspended rudder pedals give plenty of foot room below them for the person not flying.

The instrument panel, mounted in soundproofing plastic with a leather look, offers an easy-to-see display with space for full instrumentation. Switches, throttle, propeller control are in a row at the bottom of the panel.



The Standard Model Comanche is provided with no radio equipment, only basic flight instruments—airspeed, sensitive altimeter, ammeter, compass, two fuel gauges, fuel pressure gauge, oil pressure gauge, oil temperature gauge, recording tachometer, manifold pressure gauge.

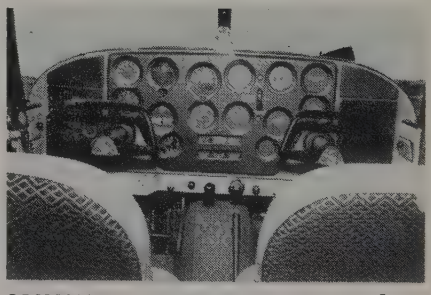
The Custom Comanche is provided with a full panel of gyro instruments for instrument flight, a Narco Superhomer VOR navigation unit, VHF receiver, and 12-channel transmitter with nine crystals as standard plus an LFR-3 low frequency receiver.

The Super Custom Comanche is equipped with a Lear ADF-2-E automatic direction finder and a Narco Omnigator Mk II VOR, ILS, VHF communications unit with 27 channel transmitter, 24 crystals standard.

Another unique light plane item is a rudder trim. This trim tab plus the stabilator tab almost give the Comanche an automatic-pilot stability in smooth air.

Strohmeier flew the first leg from Flushing to nearby Zahn Field. As I was thinking that the right side didn't have brakes, he pointed out that the plane's brakes are operated with a hand lever mounted near and below

(Continued on page 50)



COMANCHE INSTRUMENT PANEL *shows space for full IFR instrumentation on the shock-mounted panel. Brake handle is left of nose-wheel well, flap handle to the right.*

STABILATOR AND SWEPT RUDDER *of Comanche show the horizontal tail surface, a single piece unit which moves up and down with the control wheel in lieu of elevators.*

Where Do Pilots Come From?

By John Anthony

Two NBAA members make a business team to provide quick, effective service in supplying applicants for aviation jobs and finding positions for applicants.

A ten-year-old employment agency serves the aviation industry on a worldwide basis by using the latest scientific methods for selecting ground and flight personnel.

Pilots Employment Agency and IBM's file card system have proved so successful a team that business fleet operators and firms requiring executive aircraft have commissioned the agency to study personnel requirements and recommend appropriate applicants.

In addition to conventional employment agency techniques—personal interviews, personnel record searches and staff conferences the agency has developed services specially important to clients in the air transport field. It has developed a series of comprehensive psychological tests, under direction of Dr. Norman P. Berdan, co-ordinator of psychological services, one of the firm's two principals.

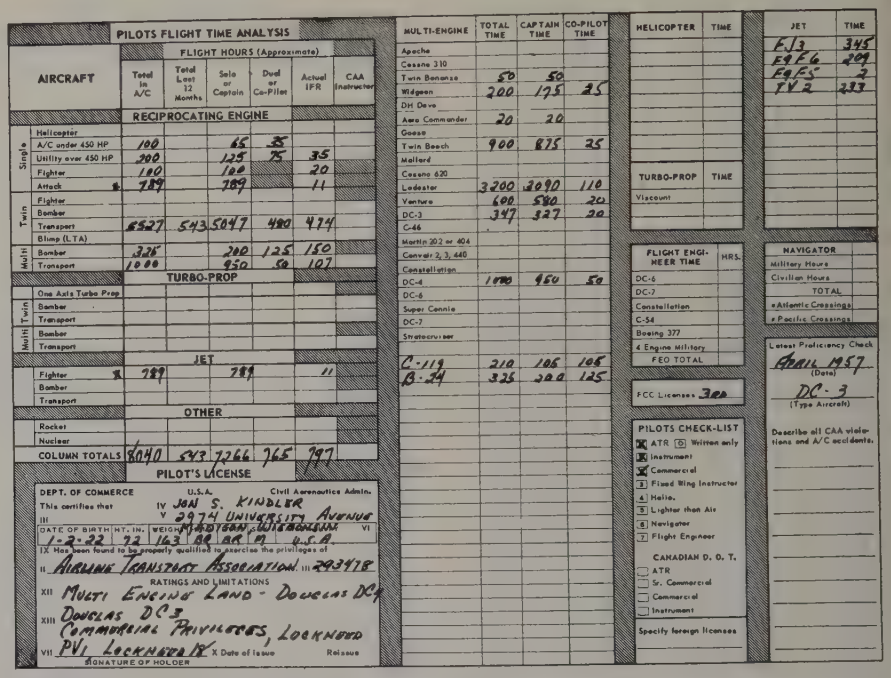
With two offices—at Teterboro Airport, N. J. and Burbank, Calif.—the agency serves scheduled and non-scheduled airlines, as well as business fleet operators. Edward S. Binder, director, PEA, makes his headquarters at Teterboro; Dr. Berdan's headquarters are at Burbank.

Without IBM it would be an impossible job to screen rapidly the more than 20,000 personnel files in the two offices. These files cover pilots, flight and radio engineers, stewardesses, administrators, control tower operators, flight and ground instructors, flight medics and many others. To keep files current at both offices, most papers coming into either office are reproduced for the other.

With this volume of records and the exacting requirements for aviation personnel, in order for the agency to find individuals suited to job requirements the IBM system of mechanized filing and finding is mandatory. As Binder says, "Our job here is really to match or integrate personalities, as well as to select the people best suited to job specifications from our large reservoir of personnel data."

Companies often seek training or experience beyond that normally required for the post of pilot. They may ask for a man with experience in or knowledge of their business or industry. They may ask for someone whose educational or

(Continued on page 35)



PILOTS FLIGHT TIME ANALYSIS

AIRCRAFT	Total in A/C	Total Last 12 Months	Solo or Captain	Dual or Co-Pilot	Actual IFR	CAA Instructor
RECIPROCATING ENGINE						
Single: Helicopter						
Single: A/C under 450 HP	100		65	35		
Single: Utility over 450 HP	300		125	75	35	
Single: Fighter	100		100		20	
Single: Attack	789		789		11	
Twin: Fighter						
Twin: Bomber						
Twin: Transport	6527	543	5047	480	474	
Twin: Blimp (LTA)						
Multi: Bomber	325		200	125	150	
Multi: Transport	1000		850	50	107	
TURBO-PROP						
Multi Twin: One Axis Turbo Prop						
Multi Twin: Bomber						
Multi Twin: Transport						
Multi: Bomber						
Multi: Transport						
JET						
Fighter	789		789		11	
Bomber						
Transport						
OTHER						
Rocket						
Nuclear						
COLUMN TOTALS	8040	543	7266	765	797	

PILOT'S LICENSE

DEPT. OF COMMERCE — U.S.A. — Civil Aeronautics Admin.

This certifies that IV JON S. KINDLER V 2974 UNIVERSITY AVENUE MADISON, WISCONSIN VI

III DATE OF BIRTH 1-2-22 | HT. IN. 72 | WEIGHT 163 | EYES BR | HAIR BR | SEX M | NATIONALITY U.S.A.

IX Has been found to be properly qualified to exercise the privileges of

II AIRLINE TRANSPORT ASSOCIATION II 293478

RATINGS AND LIMITATIONS

XII MULTI ENGINE LAND - DOUGLAS DC4

XIII DOUGLAS DC3

COMMERCIAL PRIVILEGES, LOCKHEED

VII PVI LOCKHEED 18 X Date of Issue — Reissue

SIGNATURE OF HOLDER

MULTI-ENGINE	TOTAL TIME	CAPTAIN TIME	CO-PILOT TIME
Apache			
Cessna 310			
Twin Bonanza	50	50	
Widgeon	200	175	25
DH Dove			
Aero Commander	20	20	
Goose			
Twin Beech	900	875	25
Mallard			
Cessna 620			
Lodestar	3200	3090	110
Venture	600	580	20
DC-3	347	327	20
C-46			
Martin 202 or 404			
Convair 2, 3, 440			
Constellation			
DC-4	1000	950	50
DC-6			
Super Connie			
DC-7			
Stratocruiser			
C-119	210	105	105
B-24	325	200	125

HELICOPTER	TIME

TURBO-PROP	TIME
Viscount	

JET	TIME
F-J3	345
F9F6	209
F9F5	2
TV2	223

FLIGHT ENGINEER TIME	HRS.
DC-6	
DC-7	
Constellation	
C-54	
Boeing 377	
4 Engine Military	
FEO TOTAL	

FCC Licenses 3rd

PILOTS CHECK-LIST

- X ATR (D) Written only
- X Instrument
- X Commercial
- 3 Fixed Wing Instructor
- 4 Helio.
- 5 Lighter than Air
- 6 Navigator
- 7 Flight Engineer

CANADIAN D. O. T.

- ATR
- Sr. Commercial
- Commercial
- Instrument

Specify foreign licenses

NAVIGATOR

Military Hours

Civilian Hours

TOTAL

+Atlantic Crossings

+Pacific Crossings

Latest Proficiency Check: April 1957 (Date); DC-3 (Type Aircraft)

Describe all CAA violations and A/C accidents.

EMPLOYMENT APPLICATION *developed by Pilots Employment Agency emphasizes important information on candidate's equipment and experience. All this detailed information on three page form is quickly available by means of punched cards and IBM equipment.*

MACHINE SELECTION *of qualified aviation personnel requires only two IBM units, an 024 card punch, left, and an 082 sorter. Estimated cost of data processing set-up is $14,000. Without machines Pilots Employment Agency figures 40 to 50 clerks necessary to do job.*

Contracts Awarded By CAA

Contracts totaling $3,617,054.75 were awarded by the Civil Aeronautics Administration with Communications Division of Topp Manufacturing Co., Los Angeles, Calif., receiving the largest amount, $1,099,729.95 for 65 very high frequency omnidirectional radio ranges (VOR) and related equipment.

Other contracts awarded are: Warner and Swasey Co. Lansing, Mich., $876,-934.36 for 163 engine generators; Consolidated Diesel Electric Corp., Stamford, Conn., $322,853.96 for 74 engine generators; Raytheon Manufacturing Co., Waltham, Mass., $260,920.48 for 88 remote video mixing/gating systems (used with projection-type displays for long range radar installations) and related equipment; Communications Div., Topp Manufacturing Co., Los Angeles, $190,186.26 for 54 VHF localizer transmitters and related equipment.

Teletype Corp., Chicago, Ill., $162,-106.95 for modification kits and related equipment for distortion transmitter distributors; Wilcox Electric Co., Inc., Kansas City, Mo., $146,659.65 for 14 transmitter cabinet assemblies and related equipment; Lawn Electronics Co., Inc., Freehold, N.J., $135,559.74 for transmitter control panels; Electronics Div., Curtiss-Wright Corp., Carlstadt, N.J., $132,478.05 for 15 radar target simulators.

Lincoln Electric Products Co., Inc., East Orange, N.J., $67,416 for 593 panelboards; ITE Circuit Breaker Co., Inc., Philadelphia, Pa., $56,500 for ten circular polarization kits for airport surveillance radar; Cummins Engine Co., Inc., Columbus, Ind., $54,724.44 for six engine generators; Waukesha Motor Co., Waukesha, Wisc., $41,107 for three engine generators.

Teletype Corp., Chicago, Ill., $40,-384.41 for 33 receive-only printers and spare parts; D. S. Kennedy & Co., Cohasset, Mass., $17,660 for antenna reflectors and supports; Perkins Engineering Corp., El Segundo, Calif., $5,310 for regulated power supply units; Esterline-Angus Co., Inc., Indianapolis, Ind., $2,877.50 for graphic milliammeters.

Magnetic Research Corp., Hawthorne, Calif., $1,920 for regulated power supply units; and Sylvania Electric Products, Inc., Philadelphia, Pa., $1,726 for two panelboards.

North Dakota Airport To Have New Administration Building

At a cost of about $165,000 a new administration building is being erected at Minot International Airport, N.D. Federal funds will take care of about 50% of the tab and the new building will provide facilities for airlines, customs and immigration inspectors, lunch room, airport manager and regional offices for the CAA.

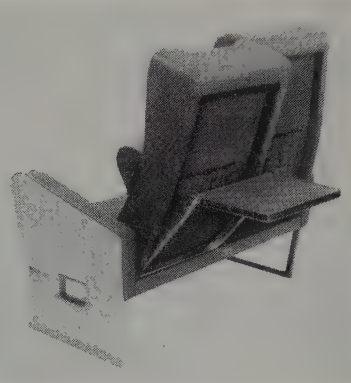
When it is finished, lots will be leased to individuals for private hangars and shops on the west side of the airport.

NBAA Selects Philadelphia For 1958 Convention Site

Joseph B. Burns, National Business Aircraft Association president, announces Philadelphia, Pa., as the 1958 site for the NBAA's 11th annual convention. Dates are September 22, 23 and 24. Convention headquarters will be the Bellevue Stratford Hotel.

Robert A. Morrison of the Insurance Companies of North America will head the convention committee in the Philadelphia area to make arrangements for housing and exhibits.

Eastern Air Lines Orders Weber Seats For Lockheed Electras



Eastern Air Lines has specified Weber Aircraft Corp., Burbank, Calif., to supply seats for Eastern's 40 Lockheed Electras with deliveries scheduled to begin late next year.

Features of the Electra seats include a sturdy tray table in the back of each seat. For ease in reaching the overhead rack, each aisle seat has a footstep built into the side panel.

Aerotherm Corp. To Supply 707 Seats For Pan American Airways

Aerotherm Corp., Bantam, Conn., announces "with considerable pride" receipt of purchase order from PAA for all of its Boeing 707 passenger seats.

New models will be produced for all requirements, first class and tourist, an Aerotherm spokesman says. Special design emphasis is placed on safety features. Deliveries are to start this month.

Near Air Collisions Reported

Near collisions of aircraft in California skies occurred at the rate of one every 36 to 37 hours during the first six months of this year.

Of the 58 near collisions reported for the first quarter, 32 cases were cases where one of the planes was military and the other civil. In 12 instances both planes were military and in 14 cases both were civil aircraft.

Of the 58 near collisions reported, 46 occurred in daylight, seven at night and five in twilight. In most cases, the skies were clear and visibility good. Most of the incidents occurred while planes were in level flight. Only 6 happened while an aircraft was landing and only five on takeoff.

In 18 cases, the flight paths of the planes were head-on, while in 14 cases one plane overtook another. In 26 cases, one plane crossed the path of the second. Collisions were averted in 22 instances by less than 100 feet, according to the reporting pilots. In 25 cases, the planes passed 100 to 500 feet apart, while greater distances up to 1,500 feet measured the closeness of the remaining incidents.

Company Uses Helicopter To Transport Personnel

The Murray Corp., Towson, Md., manufacturer of automotive accessories and plastic pipe clamps, is trying out helicopters to transport key personnel and customers to and from their plant to nearby customers' offices.

The helicopter service is provided on a monthly lease basis by Chesapeake and Potomac Airways, based at Friendship International Airport, Md. The service has proven popular with industrial firms in the Baltimore area because of the heavy ground traffic between downtown Washington and Baltimore and the airports and outlying plant locations.

By agreeing to use a minimum of 25 hours per month, a company virtually "owns" their own helicopter. C and P Airways supplies a new Bell Ranger three-passenger helicopter with pilot and assumes all responsibility and costs of operation.

The Murray Corp. uses its "front lawn" for a landing site. H. Alexander Smith Jr., president of Murray, estimates that the helicopter could save 800 manhours per year.

To Argentina By Champion

A 10,000-mile trip to Buenos Aires, Argentina, in a Champion Tri-Traveler is being undertaken by Danilo Frey, Argentine representative of Aviquipo, Inc., Champion Aircraft export agency.

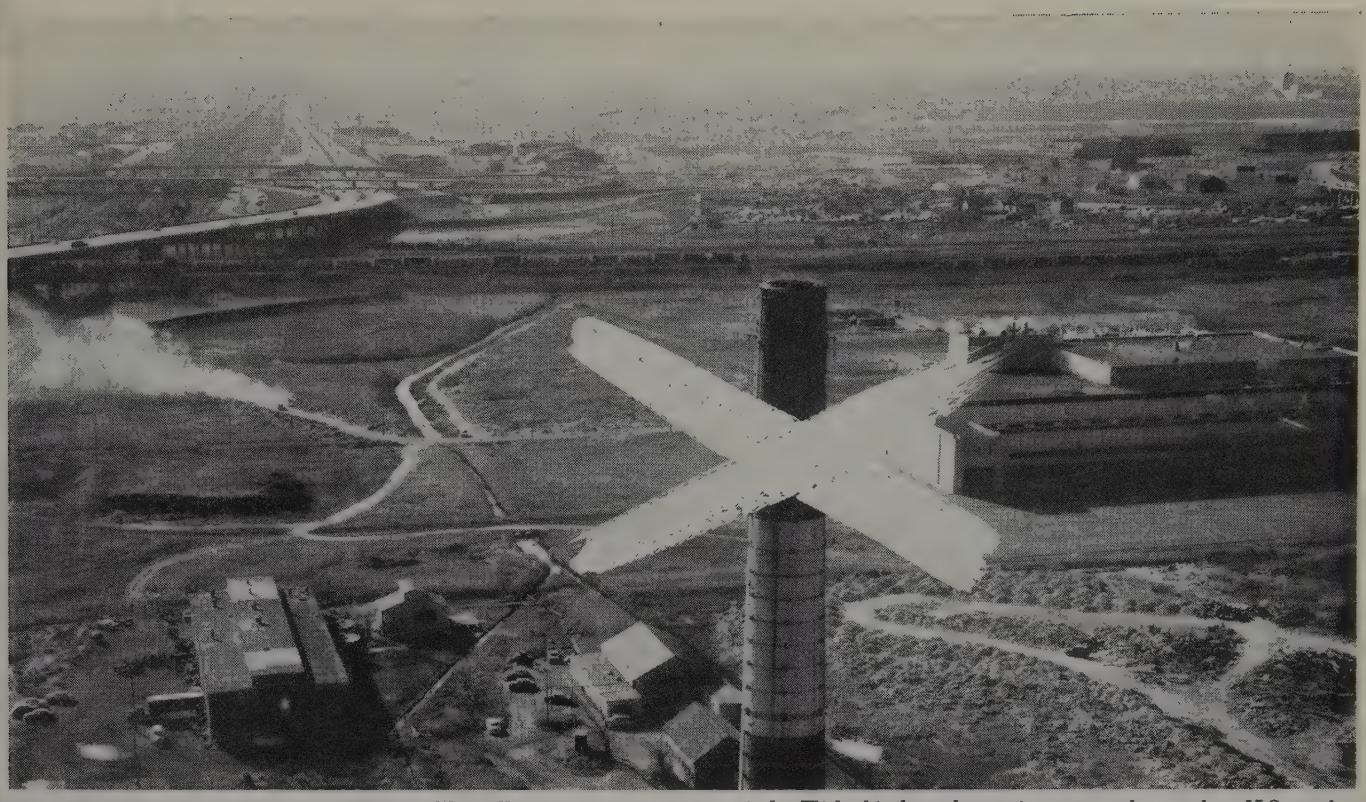
The flight started from Osceola, Wis., Champion factory site.

Champion Spark Plug Adds Engineering And Research Building At Toledo Plant

Construction is under way on a $1,000,000 engineering and research building program for Champion Spark Plug Co., Toledo, Ohio. Two new structures with a total floor space of 35,000 square feet are being erected adjacent to the company's present plant.

R. A. Stranahan Jr., president, claims the facilities will be the largest and most modern in the world for developing and testing spark plugs.

It is scheduled for completion in July, 1958.



THE CALCO STACK AT NEWARK AIRPORT, *like tall towers, was a safety hazard which halved IFR operations capacity with strong winds. With this key obstruction removed, complete ILS serving Runway 22 was installed and associated facilities planned.*

Tall Tower TERRORS

One of aviation's greatest safety hazards—the tall TV and radio towers near airports and along airways —will be largely eliminated in the future.

Through joint action of broadcast and aviation interests a memorandum of agreement is now being circulated throughout both industries setting up guide lines for new TV and radio tower construction affecting aircraft.

Known as the Joint Industry/Government Tall Structures Committee (JIGTSC) and representing all segments of aviation—military, commercial, private and business flying, (represented by NBAA), airport and state aviation officials; as well as communications engineers, and radio and TV broadcasters associations—the composite group reached an agreement:

(a) To provide protection for low altitude inter-city air routes;

(b) To provide additional protection for high density air traffic areas, present and forecast;

(c) To provide increased protection for airways and much used "flyways;"

(d) To provide additional protection for areas in the vicinity of airports; and

(e) To provide areas for the erection of radio and television towers.

Highlights of the agreement reveal that if the Air Coordinating Committee's Airspace Panel (which is charged with decision-recommending on such cases) reaches the conclusion, based solely on technical aviation considerations, that a certain tower as proposed would be a hazard, it will then determine whether or not the tower can be moved or shortened, or whether aviation adjustments should be made.

At this point in its deliberations it will obviously be necessary for the Airspace Panel to consider the direct cost of some physical relocation either on the part of television or aviation, in order that it may determine whether the economic burden should rest with television or aviation interests.

In such cases the Airspace Panel will not limit its consideration of antenna tower proposals solely to the question of aviation hazards involved, but will continue its present practice of considering economic and other factors in reaching a compromise satisfactory to both broadcasting and aviation.

It is the position of aviation that radio and television antenna towers in excess of 1,000 feet above the ground, are in themselves, considered to be unwarranted hazards to air navigation.

The broadcast industry maintains the position that this determination of hazard can be made only in the light of all facts surrounding the utilization of a particular tower.

However, it was mutually agreed that under certain conditions antenna towers in excess of 1,000 feet above ground may be required in the public interest, convenience and necessity.

In view of this, on all proposals considered by the Airspace Panel which would require towers in excess of 500 feet above the ground, the applicant shall have the right to, and should, present complete justification, excluding all economic considerations except the direct costs of physical relocation.

If the applicant does not submit justification to the Airspace Panel, the Panel will consider the application only from the aeronautical hazard perspective.

The following criteria were included in the memorandum of agreement.

A. PROTECTION FOR AREAS IN THE VICINITY OF PUBLIC-USE CIVIL AIRPORTS

1. *Classification of Airports*

For the purpose of aeronautical study of proposed antenna structure, airports shall be classified in three categories: *large, small* and *personal* airports.

(a) Large airports shall be those having one or more existing or planned runways of 3,500 feet in length or greater.

(b) Airports with runways of 2,000 to 3,500 feet in length shall be classified as small.

(c) All other airports shall be considered as personal airports.

2. *Obstruction Limit Surfaces*

To provide for acceptable clearance between aircraft flight paths and antenna structures, such structures shall not extend above the imaginary surfaces defined below except where approved after aeronautical study:

(Continued on page 47)

Now flying—the new

LOCKHEED ***means leadership***

ulti-mission Lockheed JETSTAR

—the Answer to the Air Force's Urgent Need for a Jet Utility Trainer-Transport

Designed, built, and flown in record-breaking time, the new "economy size" Lockheed *JetStar* can perform the following missions (just as well as the big jets—*and for only a fraction of their costs):*

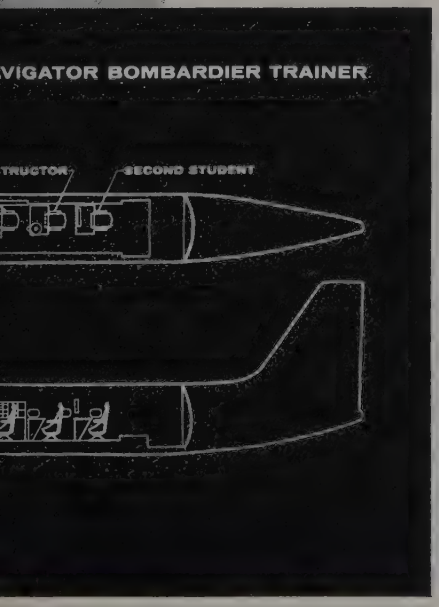
For ATC: The *JetStar* fills an indicated need of the Air Training Command for a "top-off" navigator bombardier trainer aircraft which more nearly equals the speed of jet bombers on operational duty. Cruising faster than 450 knots at altitudes up to 45,000 feet, the *JetStar* fills existing speed/altitude gaps between trainer and tactical aircraft in current use.

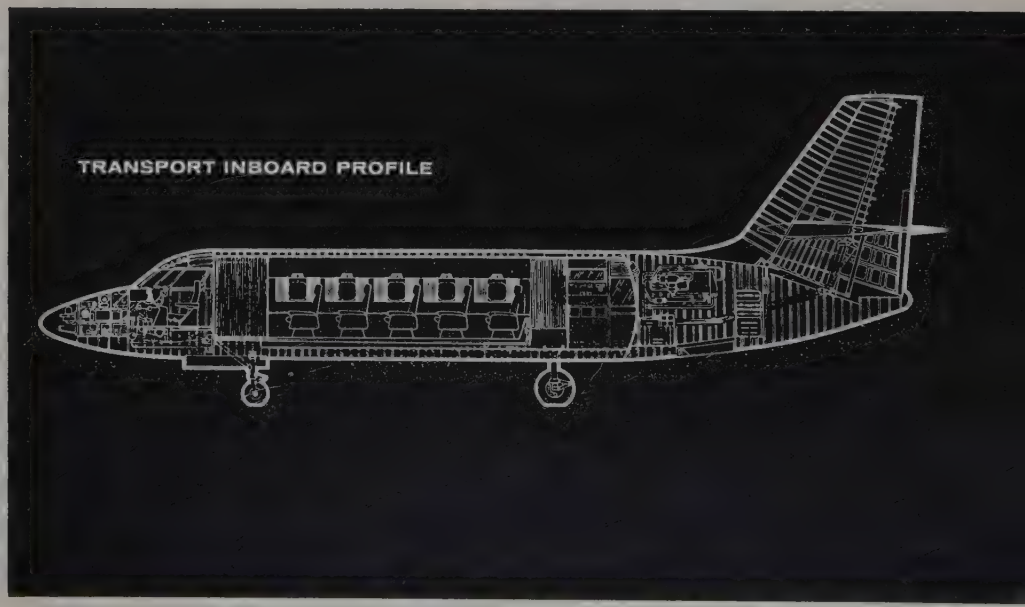
For MATS: The Aids to Airways Communication Service, operated under the Military Air Transport Service, is charged with the responsibility of airways inspection. The *JetStar's* high speed and altitude capabilities—comparable to today's tactical aircraft—will permit more thorough and effective airways inspections.

For SAC: The Strategic Air Command depends upon high speeds to rush high priority cargo from its headquarters to its retaliation bases. The new Lockheed *JetStar* can transport critical parts for bombers and navigation instruments to SAC bases—with jet speed (but at much lower cost than the big jets).

In addition to those above, the new Lockheed *JetStar* can perform many other essential military missions. Like all Lockheed planes the *JetStar* is easy to maintain, and has the inherent stamina to insure optimum utilization—qualities that are more important today in military aircraft than at any time in our history.

GEORGIA DIVISION, *Lockheed Aircraft Corporation, Marietta, Georgia*





NAVICOM

Fluorescent Edge Lights Provide Runway "Texture"

Brilliant fluorescent floodlights to illuminate uniformly the entire breadth of the runway are scheduled for Washington National Airport this winter. The floodlights consist of Very High Output (VHO) fluorescent lamps installed in eight-foot fixtures that extend in a continuous line along both sides of the landing area. The light-weight aluminum fixtures are 18 inches high.

Large reflectors spread the light horizontally across the runway surface in a manner that eliminates the possibility of upward glare. Since each 200-watt lamp has a light output of 12,000 lumens, or more than three times that of an ordinary fluorescent lamp, a complete airport installation produces 3,250,000 lumens of light per 1,300 feet of runway. By highlighting the texture of the runway surface the VHO lighting provides precise height guidance and enables the pilot to pick out a ground point to which the plane may be guided.

More than 700 feet of the VHO lighting was installed some months ago at the Andrews AFB, Maryland, beginning at a point 550 feet beyond the runway threshold. It is claimed that the lighting fixtures are fragile enough to cause no damage to an aircraft in the event it leaves the runway. Yet it stood up satisfactorily in a wind and hail storm with gusts up to 90 miles an hour.

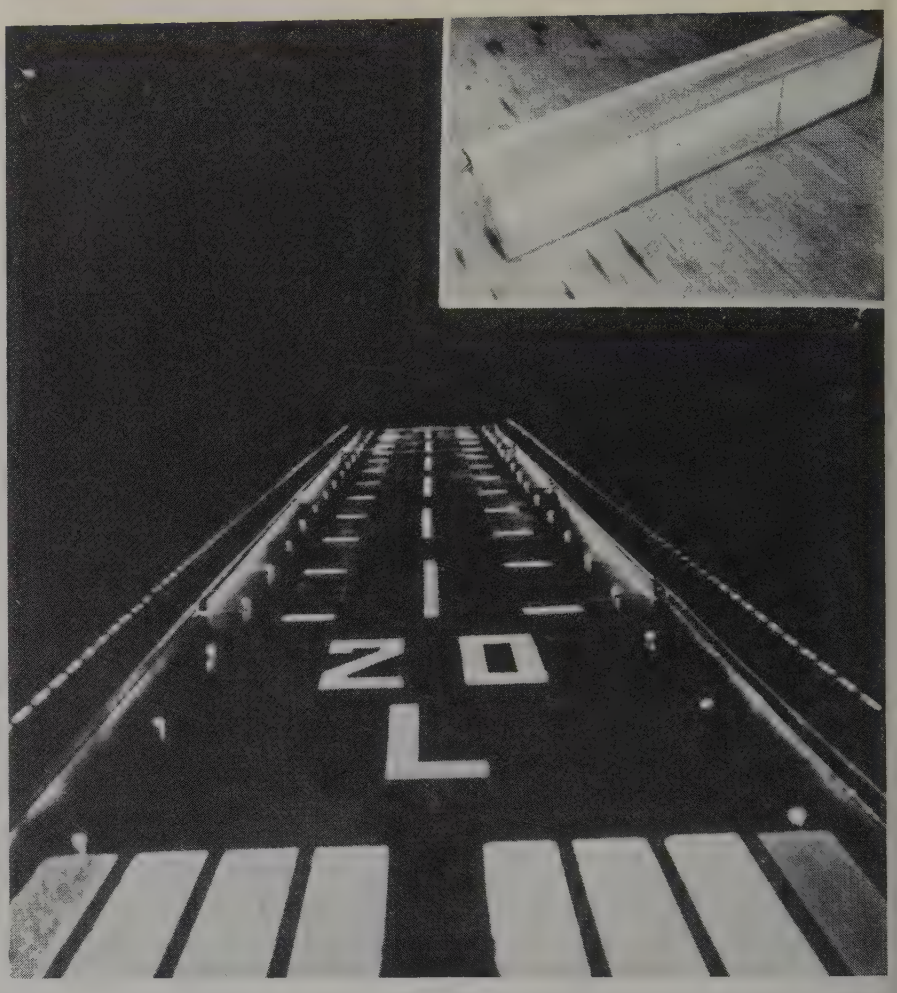
The VHO runway lights are visible running along the surface edges on both sides of the runway. Parallel lines of light on the runway exterior come from glass strips atop fixtures that were used in the Andrews AFB tests, to provide diffused upward light for runway location, but have been eliminated in later models.

The most significant Andrews test came in the early morning of last April 26, when under meteorological conditions of zero-zero weather a CAA DC-3 reported little glare, good runway texture and good height guidance from the VHO runway lights.

Synthetic "VFR" Navigation In Bad Weather Forecasted

Two new simplified aircraft instrumentation systems provide the pilot with a synthetic picture of the ground and navigational situation regardless of weather and flying conditions.

Under contract to Bell Helicopter, the Research & Development Division of the Allen B. DuMont Laboratories, Inc. has developed an Electronic Generator for a Flight Data Display known as the "Contact Analog." This Contact Analog is a display on a cathode-ray tube similar to that of a home television receiver which permits the pilot to have the latest picture by synthetic representation. The display eliminates the need for a half-dozen or more instruments requiring different interpretations by a pilot since the picture presented is an integrated composite of those referenced in the individual indications. This permits the pilot to assay his situation at a glance.



Another version is the Kaiser-Aiken thin cathode ray tube which forms the basis for a transparent "television screen"—a piece of equipment which will enable pilots to see what air traffic and terrain lies ahead. It is developed by W. Ross Aiken of Kaiser Aircraft and Electronics Laboratory, Palo Alto, Calif.

Electronic beams are shot across a phosphor-coated face inside a front glass plate and are deflected horizontally against a transparent "screen" on the back glass plate. A vacuum is maintained between the plates.

The result is a television-like image, probing through darkness, fog and clouds to record what lies ahead.

This glass screen, resembling a clear window, would be placed in front of the pilot. When not in use, it acts just like a window.

So Now It's Legal!

As of November 1st, 1957 CAR 60 was changed to authorize flying the on-course signal of low frequency ranges when operating IFR in controlled airspace.

Actually, the regulation specifically authorizes the use of the "center line" of the airway in use, regardless of the facility being employed, and also in the voluminous "off-airway" controlled airspace, "along the direct course between the navigational aids or *fixes* defining the route."

The change makes sense, because everyone was already doing it unless "otherwise authorized by ATC" for the rare occasions of "right side separation" and it occasioned more complaints of confliction in CAVU than on instruments when you happily couldn't see the traffic!

Urbana-Champaign, Ill.

The University of Illinois Airport has granted permission to the CAA to install a VORTAC facility. The CAA also is planning to establish a control tower at the state's busiest airport outside of the Chicago area.

Both VORTAC and control tower facilities will be installed and manned by the CAA, and should be in operation soon after mid-1958. The CAA will then designate the University of Illinois Airport as a control zone which will extend in all directions for about twelve miles, according to Prof. Leslie A. Bryan, director of the University's Institute of Aviation.

CAA Details Progress On Bright Radar Displays

Apropos of our discussion of current civil radar inadequacies in November SKYWAYS, the CAA has now revealed in detail the extensive effort being extended to resolve the situation.

The Technical Development Center at Indianapolis recently staged a week-long demonstration of various types of bright radar displays. The brightness was achieved by converting radar information into a television type presentation. Since a television presentation is much brighter than a conventional cathode ray tube radar picture, these displays can be used successfully in tower cabs and well-lighted air route traffic control center rooms. These displays also showed excellent "trail" characteristics.

Perhaps the most interesting display was the one known as "SPAN-RAD" which has been developed by the TDC. In this system the radar picture appeared on a vertically mounted 27-inch television tube. Immediately in front of this tube was a black table with lines marking the airways in the form of a simple map. This table surface is photographed with a standard small size television camera and the picture is mixed with the radar of the display tube. When paper markers are moved along the face of the table in positions corresponding to the radar targets, the display shows the controller a composite picture of the radar targets and the identification markers on a single screen. This display can also be remoted to other positions of the center or to the control tower.

A television monitor was also installed in the Indianapolis tower cab and was used to demonstrate how this type of display could be used to eliminate tents, huts and similar devices and permit the radar to be used for all types of control purposes *in full daylight.*

The Offices of Air Traffic Control and Air Navigation Facilities are proceeding with plans to incorporate displays of the scan conversion type into the air traffic control system.

In another part of the CAA's five-year safety improvement program ARTC Centers will be allocated radar amplifying equipment. This radar will extend the vision of traffic controllers above 80,000 feet and 170 miles away. James Pyle, CAA Administrator, said the amplifying equipment will increase the power from the transmitter eight times. Among the installations planned for 1958 will be those at Boston, Los Angeles, Pittsburgh, Seattle, Denver.

VFR Approach Control At Midway

With the substantial increase of VFR traffic at Midway Airport, Chicago, there are times when the terrific inbound rushes are resulting in "360's" or go arounds, causing traffic congestion in vicinity of the airport.

Therefore it is requested that pilots remain on Approach Control Frequency and to report at the normal change-over point to Approach Control. At this point the Approach Controller will either change the aircraft over to Local Control or give appropriate instructions to provide reasonable spacing for the Local Controller. These instructions may be in the form of a 360-degree turn—or advisory to follow an aircraft ahead, or any form or spacing that may fit the situation. Of course, many times it will not be necessary to provide any spacing or further instructions.

Aircraft Radio Corporation Receives Award

Aircraft Radio Corporation, Boonton, N. J. has received the 1957 award for Outstanding Achievement in Air Safety from the New Jersey Wing of the Air Force Association. Alanson W. Parkes, vice president of field engineering and sales, accepted the award for A R C from R. Kenneth Hamler, wing commander of the State AFA.

Hamler cited the many "firsts" A R C had contributed to flying. "The first airmail plane in the U. S. to carry radio on scheduled trips utilized A R C equipment, and the first radio beacon receiver used on regular air mail runs was designed and manufactured by A R C," he said. The first successful

"blind landing" in history was made by General James Doolittle, using a plane equipped with A R C electronic systems.

The Safety Award was also made to A R C for its forward-looking research program which has taken into account the growing use of executive and private aircraft of single and multi-engined classifications.

New York Terminal Area Changes

In order to facilitate straight-in approaches to Runway 22 on the new, added ILS at Idlewild, the navigational facilities and route structures have been revised as follows:

1. The Long Beach holding pattern has been moved to the Lido homer, holding south, one minute, left turns.
2. A new holding pattern is established at Brentwood intersection (076°/IDL VOR and 185°/ILT VOR), holding northeast one minute, left turns.
3. The southwest course of Mitchell has been swung to overlie the Lido homer, plus an IDL VOR radial to back up the LF fix.

In operation, Lido and Brentwood will be employed as feeder patterns for Runway 22 approaches at IDL. Lido will also be used as a Runway 4 feeder pattern in addition to Scotland.

The Idlewild westbound departures, (formerly called "Rikers (Is.) Departures") will now proceed via the La-Guardia ILS Middle Locator station at Holmes, principal change being altitudes, 4,000 over Holmes, 6,000 at NE/EWR, 7,000 at TEB ILS and Red 72 and CDW VOR 8,000 or above.

The LaGuardia changes are basically the deletion of the recent Oradell (NE approaches to LGA Runway 22) in favor of a more northerly pattern, Sparkill (249°/ILT and 360° IDL), holding southwest, one minute, all turns left.

This change will enable west-bound departures via Red 23 and Greentown off LGA Runway 22 and/or Runway 13 when Sparkill is in use, to proceed via a left turn over LGA LF range direct Paterson as in all other conditions (except straight-out off Runway 31).

Out of the immediate congestion but bearing on it, LF airway Green 5 will be re-aligned to employ the new Peconic LF range on eastern Long Island, making that airway coincident with Victor 16. Previously, the military necessity to fly this LF airway in contrast to the civil use of V-16 has unduly complicated ATC's work.

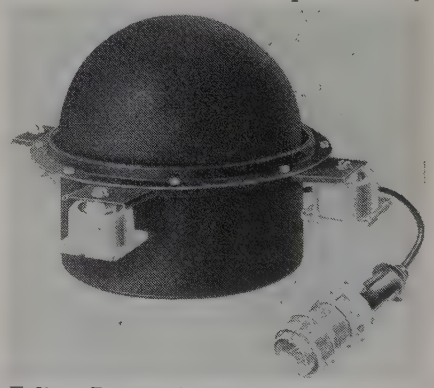
Radar Departure Control Terminology

Towers where radar departure control is used ask aircraft to "contact departure control on . . . . . frequency," meaning contact within one mile or so of the airport for identification and control purposes. It does not mean, as many have thought, that contact must be made before necessary takeoff procedures have been completed.

The CAA notes that the maximum tolerance of any radial of a VOR is plus or minus 3 degrees. Therefore, it would be possible for one VOR station to have its radials displaced 3 degrees to the right while the next adjacent VOR station to have its radials displaced to the left and both stations would be within acceptable limits but the enroute radials would miss each other by 6 degrees!

Executive Compass System

A new type Remote Reading Directional Gyro with an accuracy exceeding 1° per hour is to be offered for private and business aircraft operators by



Eclipse-Pioneer Division of Bendix Aviation Corporation.

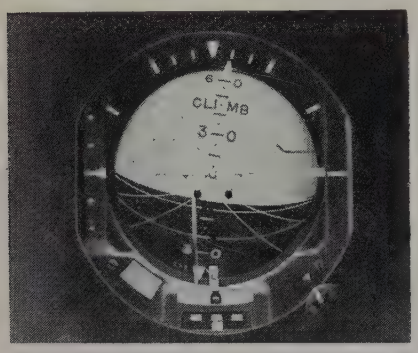
The extremely light 115 volt, 3 phase, 400 cycle gyro is the same type used so successfully in the original E-P Polar Path System.

Attitude and Course Computer Information Combined

A new Lear flight instrument offered in two versions combines the functions of a Flight Director and Attitude Indicator. The model 4053 employs the familiar fixed miniature airplane in the center of the display, but is distinguished by the addition of two cross pointers superimposed in front of the movable attitude-indicating sphere. The instrument allows the pilot to control his aircraft in attitude, intercept a selected radio beam smoothly and fly his course in relation to this signal. When the horizon line of the two-tone background sphere is aligned with the miniature airplane reference, the aircraft is in level flight. By reference to the cross pointers the pilot can maneuver in reference to localizer, glide path, omni-range or "command" radio signals.

Model 4055 features a miniature airplane which may be fixed for conventional operation, or which may be switched *to move,* providing an exaggerated pitch indication.

In the latter instance the miniature airplane is actuated by pitch signals



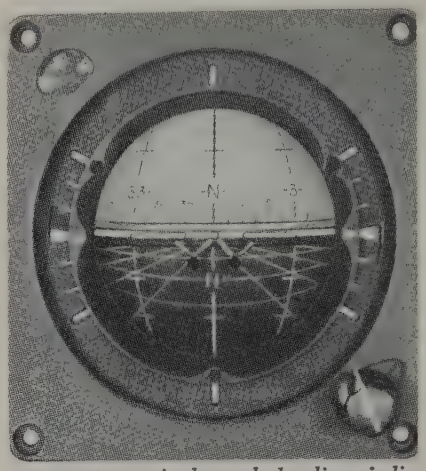
from the vertical gyro reference to provide an exaggerated pitch indication for sensitive pitch control under instrument landing conditions. Matching the miniature airplane to the vertical displacement pointer in effect performs a computer function mechanically, facilitating intercept of the glide slope beam.

In both versions of the indicator, signals from a course computer are applied to the steering pointer to provide asymptotic intercept of radio beams such as localizer and omnirange. In the pure "attitude" mode, the steering pointer is deflected out of sight to avoid clutter. Flags provide visual warning when the *signal level* to glide slope or steering receiver is inadequate. If *electrical input* to the indicator fails, a large OFF signal appears. At the extreme bottom of the presentation, an inclinometer tube and a meter actuated pointer provide slip indication and turn rate information.

To eliminate glare, canopy reflections and stray light, Lear has developed a unique system of internal lighting. Subminiature lamps and light guides are sealed within the indicator case in such a way that the translucent sphere and all indices glow uniformly with standard "aviation red" light.

In addition, "ambient lighting" provides a low intensity light to the opaque surfaces of the indicator, eliminating the impression that the internally-lighted indicator markings are "floating" in the dark.

Another development in aircraft instrumentation, the Lear 4026 Combined All-Attitude and Heading Indicator is



LEAR 4026 *attitude and heading indic.*

the first instrument to successfully combine displays of attitude *and azimuth* on a movable background sphere. The spherical background moves to indicate pitch and roll as in other attitude indicators. In addition, it also rotates about its polar axis by means of a servo system contained within the sphere. Heading indication is provided by an azimuth scale at the horizon, graduated in 5° markings, and at the polar areas of the sphere.

The 4026 Indicator can be used with any no-gimbal-lock reference system of vertical and directional gyros.

Helicopter Instrument Flight Studied

In order to better evaluate the problems of helicopter operations in full IFR weather, the CAA has initiated a practical research program with the assistance of the military services.

Six CAA pilots headed by Harry Bernard, an Air Carrier Safety Inspector, are carrying out the study with a Navy version of the Sikorsky S-58, fully instrumented, including HF, VHF and UHF communications, TACAN, VOR and DME, ILS and ADF.

The CAA pilots first completed an Army helicopter instrument flying course at Fort Rucker, Alabama, and then a familiarization program on the HSS-1 at Patuxent Naval Air Station, Maryland.

Last month the program was moved to Washington National Airport for four to six weeks of simulated instrument flying in that area, including low approaches using GCA, ILS and VOR procedures.

This month the helicopter is due to move to the New York area for additional simulated instrument flying. Finally, there will be six weeks or more of *actual* instrument flying, including approaches, in the Washington area.

According to CAA Administrator James T. Pyle, some of the questions that are hoped to be answered are: "What are the best let-down procedures in a helicopter? How will air traffic control handle separation from other aircraft? What about weather minimums? Do we need new navigational and approach equipment for helicopters, or will our present airway aids do a satisfactory job?"

Run-Up Fences Improve Airport Operations

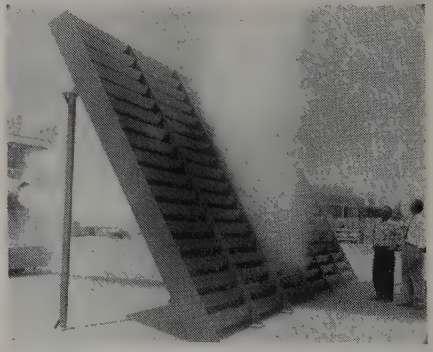
A growing problem at both large and small commercial airports is the location of suitable areas for engine run-ups. Primarily a maintenance problem requiring costly and time consuming taxiing to remote areas of the field, this problem is now being increased by unavoidable build-up of both residential and industrial areas close to end-of-run-way portions of fields. In many instances important arterial roads run perilously close to runway thresholds and run-up stands.

Previously a noise nuisance matter only, today's increased traffic and larger power plants present serious hazards from prop wash debris.

First real emphasis on run-up fences came with introduction of military jets but the problem has always been with us and enlightened airport operators can improve airport neighbor relations and safety to customer users now by the installations of these "blast fences."

The John Bean Company, manufacturers of airport safety vehicle equipment as well, produces a fence designed to deflect such blast streams upward at a vertical angle. Debris, such as stones, nuts and bolts, etc., usually collected by the blast, fall out in the area immediately behind the fence greatly assisting removal.

The Model CV-10-12 Bean Blast



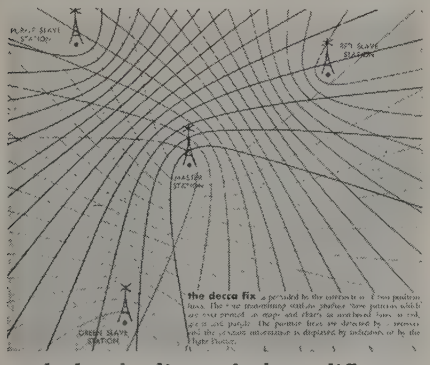
Fence is manufactured in sections 10 ft. wide by 12 ft. high and may be assembled laterally in the field for any desired length. Each section is constructed of heavy gauge steel and is welded to form a series of turning vanes, one above the other, in a cascade arrangement. Reinforced, welded steel beams support the quarter circle shaped vanes on both ends of each section and in the center. Bean Blast Fences of various heights are available and the height required depends upon the size of the aircraft involved and the area to be protected. Bean Blast Fences of bolted type construction are also available.

On Board Bendix-Decca's Flying Lab Demonstrator

On November 5th, SKYWAYS witnessed a demonstration of Bendix-Decca at the formal opening of the Quebec area chain, supplementing those opened last summer in Newfoundland and Nova Scotia. We were air-lifted from Teterboro, N.J., to Quebec via a Bendix-Pacific Division DC-3.

The demonstration, as such, was unique in that unanticipated weather enabled us to experience actual full IFR operation of the system with ice and all the trimmings. For the benefit of the nervous novitiates among the press riding behind, the crew kept cross checking the accuracy of the indications by comparison with the standard nav systems enroute and on the approach, as well as by internal checking system inherent in the airborne equipment!

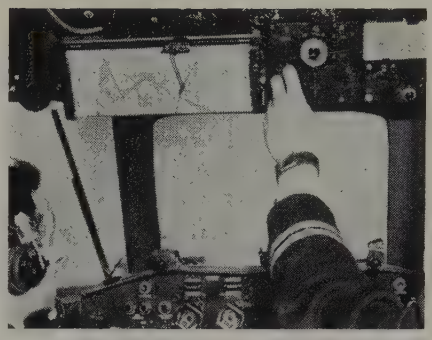
The operation of the "area-coverage" system is based on the phase comparison of continuous wave transmission in the 100-kilocycle band (atmospheric and other disturbances that plagued previous LF systems are licked by extremely high selectivity). Transmissions from the sending stations are phase locked. This permits overlapping of the phase patterns between stations to form the 360° navigational grid. The grid is



made by the lines of phase difference transmitted by the stations.

The system requires the use of groups or "chains" of ground transmitters, "master" and "slave" stations that transmit wave patterns occupying precisely known and *stable* (unlike the course vagaries of earlier LF systems) geographical positions. Each chain has a master identified as "black", and three slaves, "green", "red" and "purple". Intersection of the appropriate position lines supplies the continuous "fix" to the airborne receiver. This information is simultaneously displayed on dial indicators ("decometers") and automatically by the stylus on the plotter, actually a continuous trace line of the flight.

The latest version, called a Mark 10 chain, is not only an improvement, but additionally transmits a signal to provide automatic lane identification with high accuracy, as well as identify the zone in which a plane is traveling. This can provide dual use of altitudes on the same airway, separated by as little as 9 mi.

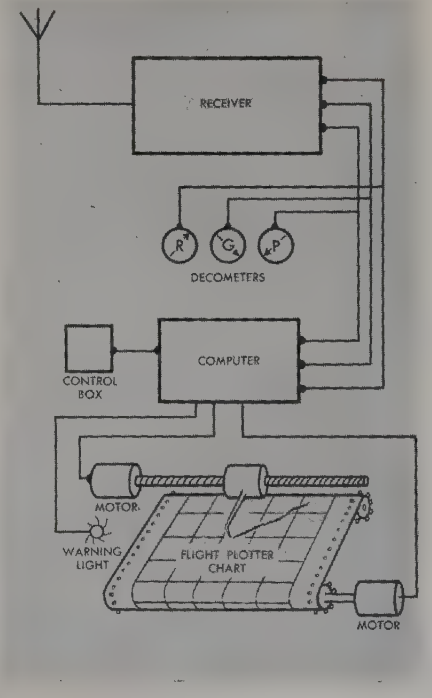


AERIAL ROADMAP, *or flight plotter, part of Bendix-Decca radio navigational network system, is adjusted by pilot.*

Remembering the economics of the VOR/TACAN controversy, we asked about the costs of installing this system in place of or in parallel to the present "common system." Bendix feels that the value of the system would warrant investment by government and industry mutually, recalling the other discussion of yore "airway user charges"! Decca admits to no ground station "site-ing" problems, one of VOR's greatest early headaches.

Considering that special charts are necessary to employ the system, Decca appears to feel that this properly is their problem along with their very novel suggestion that they would lease the airborne units on an annual basis, including routine maintenance, overhaul and periodic modernization, virtually resolving any problems of wear and tear, accuracy maintenance and obsolescence!

The charges for this vary from an estimated $1440 to $2500 per annum, which including all the above, might not be as expensive over a reasonable period of time as it might seem at first glance.



Obviously, at a time when the state of the art of navigation is in such flux, Bendix-Decca's solution is worthy of a long and careful look. When an instrument flight and low approach such as we experienced ends up in the equipment tracking the airplane accurately right up to the hangar and shutdown of engines, we can't help but be impressed!

Spartan To Photo-Map In Caribbean

Spartan Air Services Limited, air survey company of Ottawa, Canada, has been awarded two air photo-mapping contracts in the Caribbean area by the Colonial Survey of Great Britain.

The contracts cover the Island of Trinidad (approximately 1,900 square miles) and some 2,000 square miles of British Guiana.

Aircraft to be used is a Cessna 310, specially modified for vertical photography using the Swiss Wild RC-8 camera.

This is one of several foreign contracts being carried out by Spartan this winter. Others are in Colombia, South America and Kenya.

What Good is a Safety Certificate?

That's a good question, and it deserves a good answer. Some fellows are prone to think it is "just another piece of paper to hang on the wall or to get tossed in a drawer."

However, there is a lot behind a safety certificate. For every one that is issued . . . there are a number of men who have escaped serious injuries during the year. It means that members of a certificate-winning group have cooperated to avoid accidents not only to themselves, but to every member of the team, and that a lot of men were able to avoid pains and idleness that go with injuries. It means that fellows working in these teams can feel confident of their safety, and that families were spared the sorrow and anxiety of being deprived of a loved one.

While winning a certificate relates a story of happiness and security, failure to win one implies the absence of one or more men from their jobs either temporarily or permanently. So don't let anyone tell you that a safety certificate means nothing. Just look at the ones that haven't got one and you'll find a painful story, also the answer to "What good is a safety certificate." —From the December 1954 issue of Railroad Safety Newsletter.

Aid To Navigation

In order to clear up certain differences in various aeronautical publications:

"The Low Frequency Non-Directional Radio Beacon at Shelton, Wash., includes a station location marker."

SAFETY EXCHANGE

Civil Over-Run Arresting Gear For Increased Safety

Just so no one concludes that the last word in increased safety of airport operation has been said, All American Engineering Co. of Wilmington, Del., has announced a line of arresting systems for virtually all sizes of civil transports from the light executive twins on up.

Only recently a dramatic demonstration of active acceptance of new safety techniques, minimized a potential catastrophe when an airline DC-7 belly-landed almost complacently on a foam covered runway when the landing gear failed to extend properly.

Over-run accidents are not supposed to happen with current reverse-thrust prop aircraft, nor aborted landing accidents like the Martin at Las Vegas, but they do and with the gradual introduction of civil airline and business jets they will increase. Airports can only get so much larger in their present locations, so over-run areas have an immovable limit. The answer has to be runway arresting gear such as the military have found so valuable.

The cost of such gear is less than one medium size civil transport wash-out, not counting the lives in jeopardy. As improved instrument approach techniques lower ceiling and visibility minimums, suitable arresting gear other than the ILS runway localizer shed or the airport boundary dike/fence may well be as much a requirement as the hi-intensity approach and runway lights.

The AAE "Water Squeezer" is a relatively simple and inexpensive device available in configurations capable of handling aircraft of 10,000 lbs. at 120-160 kts. up to 400,000 lbs. at up to 180 kts., in event of reverse thrust or brake failure.

An arresting cable is placed flush across the runway at the beginning of the overrun area. The arresting cable is attached to the tips of several telescoping intermediate stanchions.

The stanchions retract flush into the runway. In operation readiness, an actuator cable is tensioned a few feet above the runway directly over the arresting cable and a series of stretchable wire coils attach the actuator cable to the stanchions.

The nose wheel strut of the aircraft engages the actuator cable and pulls it forward. As the wire coils stretch the stanchions extend, bringing the arresting cable up into position where the main gear engages it and arrests the aircraft.

This method of actuating a runway barrier has the advantage that it requires no structural additions to the aircraft.

Where desired, the actuator cable can be lowered or raised by remote control from the tower to allow taxi or takeoff operations over the flush barrier.

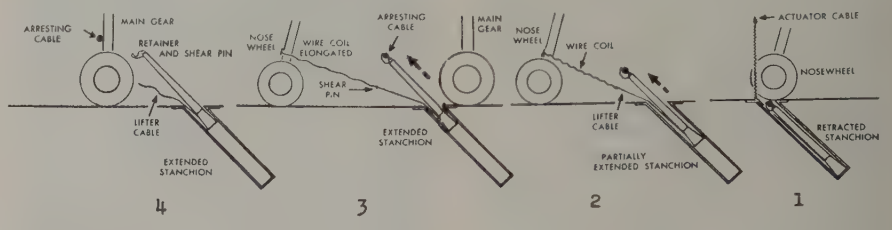
The "water squeezer" arresting gear is an entirely underground or under-runway device and consequently does not hamper normal operations.

A "water squeezer" energy absorber works like this:

Tapered pipes are buried in ditches a few feet on each side of the runway and the pipes are filled with water.

A cable is stretched across the runway and both ends of the cable attached to a loose fitting piston in each water-filled pipe.

When the aircraft landing gear engages the arresting cable, the piston is pulled through the pipe giving the appearance of squeezing water although not actually doing so. The water thus absorbs the energy of the onrushing aircraft, bringing it to a halt without damaging either plane or arresting gear.



"Water squeezer" runway barriers can be installed at either end of a runway where the overrun space is adequate or on active runways where the overrun area is limited; either installation of such barriers will add a new safety factor to jet operations at commercial airports.

Tests with military aircraft at the company's Georgetown, Delaware, test base have proved that a "water squeezer" arresting gear is capable of high arresting speeds and thus would be useful in cases not only of overrun on landing but for an emergency in aborted takeoffs.

A "water squeezer" arresting gear presents the advantage over other types of existing arresting equipment in that it is always ready and does not require care and maintenance of delicate or intricate equipment. As long as the pipe is filled with water the "water squeezer" is ready and will remain so indefinitely. A "water squeezer" does not require adjustment for different landing weights and speeds within the design range, says D. F. McCallister, flight test chief.

Commercial Certificate At Stake In CAB Mental Health Hearing

Part 29 of the Civil Air Regulations was recently revised. It formerly provided in identical language that to obtain a Class 2 (Commercial) or Class 3 (Private) medical certificate "An applicant shall have no disease of the mental or nervous system and no abnormality of the personality."

The revised regulation makes clear that (1) a history of serious mental disease is not automatically a bar to issuance of a medical certificate; there must be an individual evaluation of each applicant's condition to determine whether he can safely exercise the airman privileges to which he could become entitled under the certificate; and (2) the standards for different classes of medical certificates are no longer identical, but vary with the type of medical certificate sought.

The importance of a proper interpretation of all the above to any commercially rated professional pilot who, either in the past suffered a nervous breakdown or minor disorder, or in the future might be so effected even temporarily, cannot be disregarded.

In a CAB hearing case history that began in 1949, a commercially rated pilot has been before the Board three times and the matter is still open, based on the latest change in the regulations cited above.

The pilot in question was retired from the Navy in 1947 after it was determined that he was "permanently incapacitated for active service by reason of psychosis manic depressive." Prior to the first hearing in 1949, he was committed to an institution in Georgia as a mentally incompetent person, which committment was subsequently vacated by the same court and all rights restored.

The CAA subsequently denied him even a 3rd Class medical certificate but was over-ruled by a Board examiner who found that he did not then suffer from any such disabling condition but required that he furnish the CAA with a psychiatric appraisal every six months!

This the pilot did, and then in 1955, he applied for issuance of a Class 2 certificate (Commercial). In informal discussion, the CAA indicated that he would be denied, so he filed with the Board for a review of the application. The examiner, on the basis of the rec-

President C. E. Woolman examines model of jet airliner. Delta has ordered $100,000,000 of new aircraft. Jetliner service begins in 1959.

Golden Crown Hospitality

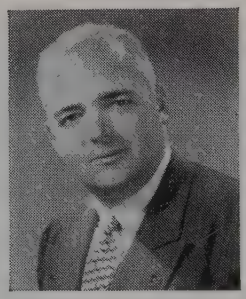
Another in a series on the care taken by leading airlines to maintain top flight efficiency– and why this care has led them to select CHAMPION SPARK PLUGS. Noted aviation authority reports on America's No.1 Certificated Airline, **DELTA AIR LINES...**

by HERB FISHER

I like mine rare – and I got it rare!

That's a part of Delta's "firsts." It's a part of what makes Delta different—earthy southern hospitality in the wild blue yonder.

Golden Crown Hospitality is Delta's coronation of the three regal requisites—Safety, Service and Dependability – that underlie operation of a truly successful airline.



HERB FISHER
international aviation authority, veteran test pilot, author

"Firsts" come naturally for the airline-with-a-heart, President C. E. Woolman will tell you:

Delta holds Certificate No. 1—America's first certificated airline. Delta was the first airline to offer packaged summer vacations to Miami and the Caribbean. First to provide DC-7 service to and through the South. First to provide reserve seating on Chicago-Miami nonstop service. First, as part of its Crown hospitality, to give passengers their choice of steaks—rare, medium or well-done!

I got at the grass roots of Delta hospitality recently at the airline's Atlanta headquarters. With everyone there—from airline president to porters, from flight crews to ground crews—the passenger is prince. His safety and comfort are paramount.

"Delta operates by the Golden Rule," President Woolman said. "We simply put ourselves on the customer-side of the counter, treat our passengers as we would like to be treated. We believe an airline has a responsibility to the public over and above what's required by the price of a ticket."

Flying Scot coach flights as well as Golden Crown luxury flights have made Delta one of the most popular airlines in the nation. Royal monarchs of the skyways, of course, are those 365-mph DC-7's embossed with the Golden Crown seal of supremacy. These pace-setters for the airlines of the world are truly a Golden Crown interlude in the life of a passenger.

Delta Aircraft at the Atlanta Terminal.

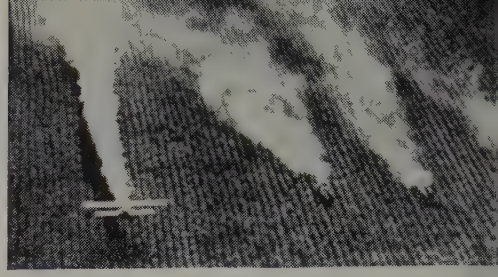
Delta began in 1924 as the world's first commercial crop-dusting outfit . . . graduated to transportation in 1929 with three 6-passenger Travelaires . . . today operates 74 modern transports — DC-7's, DC-6's, Convair 340's and 440's, Constellations, DC-3 and C-46 cargo planes.

Delta serves 60 cities in seven countries, covers 10,765 route-miles, flies more than a billion passenger-miles annually, employs close to 6,000 people. Employee turnover is the lowest in the aviation industry — an enviable record.

This progressive airline keeps its passengers as it does its employees, thus daily disproving the old belief that a big company outgrows its earlier personal relationships with individuals.

Today, just as in 1924, "C. E.'s" office is open to all — new mechanic or old pilot. The president's open-door policy has made Delta a "family" organization in which each employee feels that his personal role is important in the development of his company. This policy has kept dignity in the character of Delta as well as in the individual; has fostered inherent, genuine southern hospitality; has heightened operational efficiency; has made this airline a favorite of the millions who enjoy its service in the United States, Cuba, Jamaica, Venezuela, Haiti, Puerto Rico and the Dominican Republic. It has helped boost Delta from "firsts" as a pioneer airline to "firsts" in its present stature among the nation's largest airlines.

Examining heart of powerplant, the ignition system (L/R): Larry Watson, Powerplant Gen. Foreman; Fisher; L. W. Carlton, Gen. Foreman; Dean Miller, Specialist Group Supervisor.



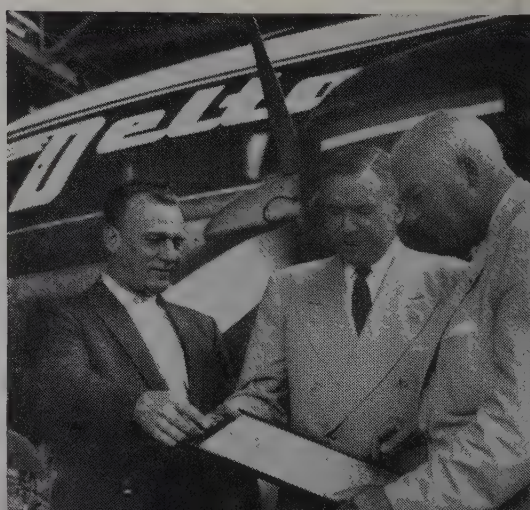
Delta began operations in 1924 as world's first commercial crop-dusting company.

Delta recently received an Award of Honor from the National Safety Council. It's axiomatic that the Number 1 airline in safety must be equally as high-ranking in maintenance. One manifestation of this fact is the Delta "first" in using X-ray in its aircraft overhaul inspection. Also typical of Delta's leadership in operating the finest, safest equipment is the Collins Radar Weather Eye. This radar development enables the pilot to survey his weather 150 miles ahead, guaranteeing passengers a velvet ride.

"Maintenance certainly is the crux of a superior operation," President Woolman told me. "Without good maintenance the finest pilot in the world is hard-pressed to conduct a good flight. Over the years, we've always put quality-of-maintenance in top position in our operation. We never economize in maintenance, in the quality of materials going into maintenance."

There isn't a stick-man behind a fan today who wouldn't say "amen" to that! As a long-time test pilot myself, I can swear to it.

Vice-Pres. C. H. Dolson and President C. E. Woolman (L/R) show Fisher the original No. 1 Airline Operating Certificate issued by C.A.A. Delta received it Aug. 22, 1938.



Charles H. Dolson, Vice-President—Operations, said it for me as I probed the heart of Delta's operation there at Atlanta: "Just as maintenance is never-ending, so is evaluation and re-evaluation of all airline methods, procedures, processes, materials and accessories. Vital aircraft equipment undergoes extensive, exhaustive testing and re-testing here.

"Such is it with Champion Spark Plugs, for example. Delta has been using Champions since 1944."

At this Atlanta overhaul base, I saw firsthand Delta's consummate efforts to provide passengers with the very best in safety, service and dependability. I was struck by the painstaking attention to detail throughout Delta maintenance.

Overhaul is done in 24 shops on a progressive or block basis, thus providing lower downtime on fewer aircraft over shorter periods . . . and more available aircraft during peak traffic periods.

Lewis Carlton, General Foreman of Overhaul, showed me the intricacies of the operation that now gives Delta a daily utilization of 11 hours on aircraft that formerly lent themselves to only six hours' utilization per day.

"I've had experience at digging into the reasons for engine trouble," Mr. Carlton said, "and I can truthfully say that only in very rare cases can you rightfully blame the trouble on spark plugs. When an engine starts to cough or backfire, first thing many airlines want to do is change spark plugs."

Mr. Carlton told me about the causes of engine trouble that Delta has turned up—none of them having anything to do with the vital heart of the Delta aircraft ignition system, the Champion Spark Plug.

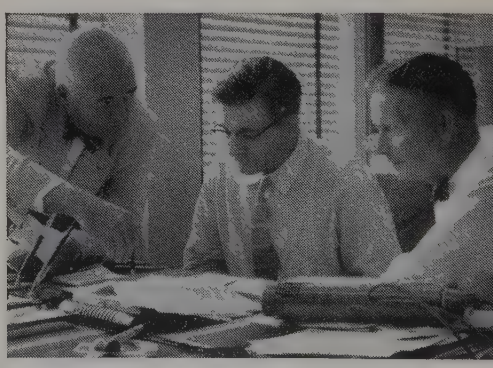
"Matter of fact," he added, "I've had a set of second-hand Champions in my own 65-hp Aeronca since 1952 – over five years! – and they're still running perfectly. Sure, I fly 'em! I fly to and from work—I depend on those spark plugs to get me there on time, too—and, in checking my log book recently, I found I'd cleaned those spark plugs just once and have a grand total of 760 hours on them. Furthermore, they're still good!"

Referring back to Delta's 13-year use of Champions, Mr. Carlton said: "We ought to tie our Delta slogan, 'There's No Compromise with Safety,' to the Champion slogan,

Southern hospitality from the heart makes for lasting friendships. It's a Delta tradition. Sky Lounge of this DC-7B is warmly decorated in tan, white, aqua and gold.

Delta flight crew chatting before takeoff (L/R): 1st Officer E. N. Thomas, Stewardess Nancy K. Shiels, Capt. James Dalton, 2nd Officer Eugene Caverly, Stewardess Betty J. Brantley.

Champion Spark Plugs, typical of Delta's use of only the very finest in aircraft parts and equipment, are being gapped by Delta mechanic H. L. Mang.

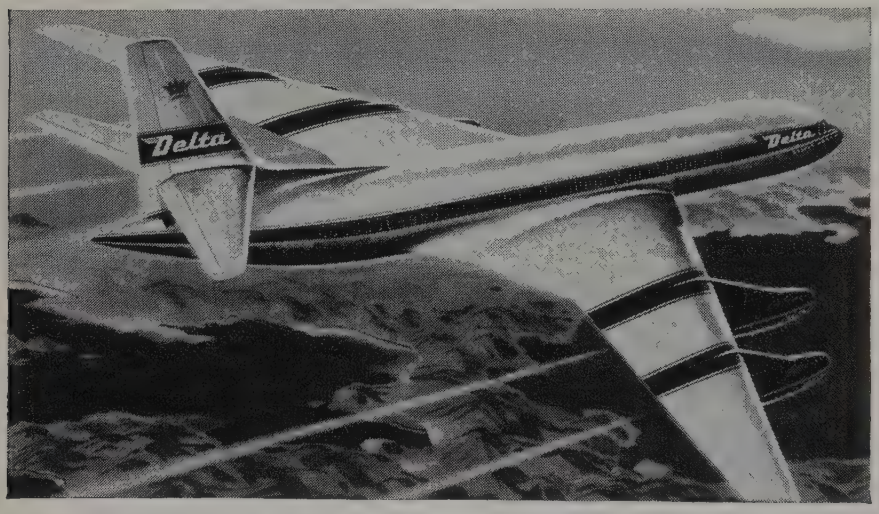


Economics of the Delta Air Lines operation are discussed by (L/R) Fisher; K. T. Wilson, Purchasing Agent, and W. H. Hobbs, Buyer for Delta's Purchasing Department. "Champion maintains a high-quality product at reasonable cost," Mr. Hobbs reported. "With Champions, Delta achieves dollar economy in long life as well as in dependability," Mr. Wilson said.

'Dependable Safety,' and make it: 'There is No Compromise with Dependable Safety.' "

And there is no compromise when the life-beat of the aircraft heart depends on Champions. That was the feeling I found shared by all technicians, specialists and supervisors in Delta's maintenance and overhaul operation – an operation that today includes more than 50 majors a year.

The Dim Past – A 6-passenger Travelaire in flight in 1929. Delta's first year of passenger service.



The Immediate Future – This 600-mph Delta jetliner will be in service in less than 2 years.

"To achieve greater service life on an engine and its components, Delta is always receptive to service tests of other equipment," Dean Miller, Delta Specialist Supervisor, told me. "A vendor's product must meet our own rigid standards as well as those of the appropriate government agency. Champions meet our rigid test standards and experience requirements."

Larry Watson, Delta Powerplant Overhaul General Foreman, knows ignition systems and spark plugs inside and out. He referred to Champions as "the most dependable, trouble-free spark plugs available today." He credited Champion with having helped Delta attain and maintain its present stature as a top airline in efficiency and dependability.

The purse-string holders in any business are the centrifugal forces of decision. Yet in the airline business economy is measured as much by dependability as by dollars and cents. "We don't buy solely on a price basis, but rather on a basis of what's the best product to accomplish the purpose at hand," K. T. Wilson, Delta Purchasing Agent, told me. With Champions, Delta achieves dollar economy in long life as well as in dependability.

"My constant aim for Delta is to secure the right materials in the right quantities at the right time and at the right price to support an efficient and economical operation," Mr. Wilson said. The record indicates Champion has been right for Delta these past 14 years. Champion providing a short lead-time on its product makes it possible for Delta to carry a minimum inventory of spark plugs and, hence, keep its dollar investment at the lowest minimum.

"We've never had any delivery difficulty—and we've never received a spark plug shipment containing rejectable material," said W. H. Hobbs, Buyer for Delta's Purchasing Department.

Champion has thus contributed to Delta's tripodal success in Safety, Service and Dependability . . . and Delta has firmed its top position among big airlines with a monumental base of southern hospitality.

"This is just the beginning," Operations Vice-President Dolson reported: "We have on order right now over one hundred million dollars worth of new aircraft – more DC-7's plus DC-8's and Convair 880's – 18 four-engine jet airliners.

"Here's a sample flight schedule we plan to have in effect within two years:

"Chicago to Miami – two hours, 25 minutes.

"New Orleans to Chicago—one hour, 54 minutes.

"Atlanta to Dallas—one hour, 37 minutes.

"Houston to Washington—two hours, 40 minutes.

"Atlanta to New York—one hour, 36 minutes."

Discussing Delta's top safety record (L/R): C. B. Wilder, Technical Operations Director; Fisher; A. C. Ford, Engineering Superintendent; G. J. Dye, Maintenance Superintendent.

And you can bet there'll be more *firsts* for the airline-with-a-heart when Golden Crown Hospitality spans the skies on jet wings.

ord, found that there was no evidence of a current disqualifying condition, that the certificate should be issued and inasmuch as the CAA apparently disregarded the periodic reports on which this finding was based, there was no need for the pilot to submit further reports. (Prior to the hearing, the pilot had offered to submit himself, at the Government's expense, for a medical examination by a psychiatrist of the CAA's choice. The offer was not accepted and the statement made that even if results were favorable for the pilot, it would not influence the Administrator's position. This attitude was changed belatedly during the hearing and the examiner supported the pilot's refusal to undergo such an examination in the light of sufficient other evidence as to his mental health!)

However, the Board subsequently opined that it was in the interest of public safety to re-examine his qualifications in the light of the new standards, confirming meanwhile that it should now be clear that denial of a medical certificate should not be predicated solely upon a prior history. They also took the precaution in this instance of reserving the re-examination to the Board in the light of the Administrator's expressed conviction against the issuance.

Proposed Accident Report Changes

The CAB has proposed alteration of civil air regulations to eliminate the necessity of reporting accidents involving small fixed-wing aircraft where the accidents cause no serious personal injury. The change would affect aircraft undergoing flight testing and other experimental aircraft.

Another proposed change would eliminate the necessity of filing a CAB report for every accident incident to flight of large fixed-wing aircraft resulting in serious or fatal injury when the accident does not also involve substantial aircraft damage.

Such accidents would include those attributable to turbulence, evasive maneuvers to avoid mid-air collisions, falling or jumping from aircraft or contact with the rotating propeller of an aircraft on the ground. Future reports of such accidents may be submitted in the form of a memorandum giving a narrative account of pertinent facts.

ALPA Asks "Fail-Safe" Policy In Crew Requirements

The Air Line Pilots Association has charged that an extremely erroneous impression has been created by remarks attributed to Dr. J. E. Smith, Acting Director of the CAA Medical Division. The alleged remarks were just prior to beginning a flight, and in an interview which inferred and drew the conclusion that human physical failures were a peril to air safety. Several in-flight deaths in recent years have made the headlines.

However, according to C. N. Sayen, president of ALPA, "no accident has ever occurred in scheduled commercial air transportation due to physical failure of the pilot."

"However, because physical incapacitation and physical failure in flight can and does occur, it is necessary to take adequate precautions to protect passengers in aircraft when it does occur and preserve this record."

"It is possible to provide this protection by extending the 'fail-safe' concept utilized in other parts of the aircraft to the crew."

"This can be realized in two ways:

1. By raising the original licensing and recurrent training standards for copilots whereby they will be required to be fully qualified to operate the type of aircraft which they fly.

2. By requiring the third crew member on air transport aircraft to be pilot-qualified."

Sayen pointed out that under present federal regulations there is no requirement that the copilot be qualified to fly the particular aircraft on which he is serving or have the training and experience to take over in the event of incapacity of the Captain. Similarly, there is no requirement that the third crew member be even qualified as a pilot and, therefore, capable of taking over for the copilot.

"A pilot may be incapacitated without heart failure or failure of some other vital organ. It may only require food poisoning, acute appendicitis, or some other normal emergency which happens to people every day."

TV Speeds Weather Reports

NAS Lakehurst became the first of eight stations to inaugurate Weathervision, a closed circuit television system for briefing pilots.

The device, designed and manufactured by the Dage Television Div., Thompson Products, Inc., enables instantaneous transmission of weather information to many squadrons at one time. Thus, time is saved, and pilots can act more quickly in emergencies.

A television camera transmits weather maps and other aerological information from the station aerology office to receivers in several locations around the station. Two-way radio communication enables pilots to get additional information from aerology.

Dage Weathervision equipment is at seven stations and will be put into operation as soon as it can be installed.

Fresno Radio Changes Announced

At Fresno, Calif., the FNO Radio Range has retuned and realigned courses. The new courses are 076, 136, 256, and 316 degrees magnetic.

Patco Unicom, Sacramento, Calif., Has New Frequency

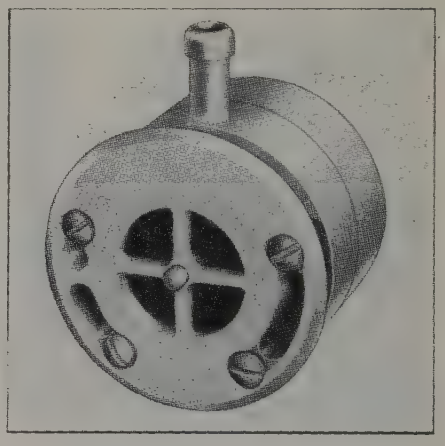
The FCC has notified Patterson Aircraft, Sacramento, Calif., to change the business frequency at Sacramento Municipal Airport. Because 122.8 mc has become so heavy with traffic, pilots calling PATCO UNICOM are now required to use 123.0 mc.

Busy Periods

Under busy periods it would help the Local Controller if the outboard aircraft would refrain from contacting the Local Controller for take-off clearance until he is No. 2 or No. 1 at the runway.

Oxygen Regulator Designed For New Business Aircraft

The Pioneer-Central division of Bendix Aviation Corporation is currently offering their Type 29207 Regulator designed primarily for installation in an oral-nasal mask to supply emergency or sustained breathing oxygen to passengers and crew of high altitude business-executive type aircraft. The breathing oxygen may be supplied by the regulator as either 100% oxygen, or oxygen diluted with ambient air, the determining factor being the value of the inlet supply pressure. With reference to the "Specifications" section, it is noted that a minimum supply pressure variation of 10 psi, within specifically indicated supply ranges, is required in order to change the type of oxygen flow being delivered.



Supply oxygen is delivered to the mask mounted regulator by means of a small diameter, flexible hose which is attached to a supply source outlet station. Molded nylon material has been utilized for the major body components, affording light-weight durable and smooth surface construction. Elastomers used are of silicone compounds which retain their resiliency through extended service periods and afford long shelf life.

Regulator can be factory calibrated to provide sufficient breathing oxygen to meet the physiological requirements per Figure 4b-21, Civil Air Regulations Part 4b, for a specific cabin altitude between 14,000 and 21,000 feet. When the cabin altitude increases above the preset altitude, means must be provided to affect the inlet supply pressure so as to assure automatic delivery of 100% oxygen. This serves to increase the operational ceiling to 30,000 feet for unlimited service periods, and up to a maximum ceiling of 40,000 feet for limited periods of time.

Various types of special purpose masks are available for use with the regulator. Detailed information will be supplied upon request.

First CAA Jet Engine Repair Station Certificate To Southwest Airmotive

First repair station certificate ever to be granted by the CAA for the overhaul of commercial jet engines and specific accessories has been received by Southwest Airmotive Co., Love Field, Dallas, Tex.

SAC's Air Agency Certificate includes ratings for the overhaul of the Allison 400-C4 turbine engine and Allison and Pesco pumps, Bendix and Rochester fuel controls, Detroit Deisel fuel nozzles, Allison fuel manifolds, Scintilla ignitors, Scintilla HiTen ignition harnesses, Parker and Kohler valves, Air Maze filters and Cook pressure switches.

The firms certificate also provides ratings for the overhaul of conventional aircraft, powerplants, propellers, instruments and accessories.

SAC has been overhauling Air Force J-33-A-35 jet engines since 1955.

Suite 344

(Continued from page 8)

A sure way for the Board of Directors to know all efforts are appreciated, we welcome the following new members of NBAA. WILLIAM BLACKFIELD ORGANIZATION, Oakland, Calif., construction and aircraft, operating S-Aero Commander 560 E. William Blackfield, pres., is NBAA Rep. and R. Dolan, chief pilot, is in charge of aviation activities; BLACKMER PUMP CO., Grand Rapids, Mich., manufacturers of industrial and truck mounting power pumps, hand pumps and strainers, air eliminators and pressure control valves. Operate Piper Apache PA-23. Britton L. Gordon, pres., is NBAA Rep. and Alfred T. Banas is chief pilot; CAMPBELL-EWALD CO., Detroit, Mich., advertising agency, operating Cessna 310. Carl J. Ally, aviation representative, is NBAA Rep.; Ronald Kimler, chief pilot; and S. J. Rozema, secretary, is in charge of aviation activities; the CLEVELAND-CLIFFS IRON CO., Cleveland, O., mining, shipping and selling iron ore, operating Lockheed Lodestar 18-56. C. W. Allen, vice-pres., is NBAA Rep.; George J. Healey is chief pilot; and C. W. Allen, vice-pres., is in charge of aviation activities; CONTAINER CORP. OF AMERICA, Chicago, Ill., paper board and paperboard products, operates Douglas B-23, Cessna 310 and Aero Commander 680-A. L. D. Gould, mgr., Aviation Dept., is NBAA Rep., and Robert A. Swanson is chief pilot; HYDROFORMING CO. OF AMERICA, INC., Chicago, Ill., mfgr. metal fabricators, operating Cessna 310. Col. Herman E. Lacy, pres., is NBAA Rep. and chief pilot; JEFFERSON STANDARD BROADCASTING CO., Radio Station WBT—TV Stations WBTV and WBTW, Charlotte, N.C., operating Cessna 310. Tom McNeil, chief pilot, and Charles H. Crutchfield, executive vice-pres. and general manager, is in charge of aviation activities; NATIONAL STEEL CORP., Pittsburgh, Pa., operating two Lockheed Lodestars, Lockheed Super Ventura and Douglas B-23. R. L. Hamilton, chief pilot, is NBAA Rep., and Paul E. Shroads, vice pres., is in charge of aviation activities; O'DEA FINANCE CO., Des Moines, Ia., automobile financing, FHA loans, appliance, operating Piper Apache PA-23. E. L. Burgeson, pres., is NBAA Rep., and Thomas W. O'Dea is chief pilot and in charge of aviation activities; RYDER SYSTEM, INC., Miami, Fla., operates Lockheed Lodestar. Fred T. Scharrer, Jr., chief pilot and in charge of aviation activities is NBAA Rep.; WESTINGHOUSE AIR BRAKE CO., Pittsburgh, Pa., manufacturing, operating Lockheed Lodestar; Capt. Frank A. Mills, chief pilot and in charge of aviation activities is NBAA Rep. All of the above are Regular Members of NBAA, i.e., companies owning and operating aircraft as an aid to the conduct of its business.

The following are Associate Members, companies interested in the aviation of air transportation field. SOUTHERN CALIFORNIA AIRCRAFT CORP., Ontario, Calif., repair, overhaul and modification of military and commercial aircraft, operating a DeHavilland Dove. James L. Fechter, vice-pres., is NBAA Rep. and A. O. Misener is chief pilot; TWENTIETH CENTURY AIRCRAFT, Inc., Sun Valley, Calif., aircraft modification and overhaul, C. N. Radford, vice-pres., is NBAA Representative.

Were you among the "On-Timer" Prize Winners—the winners were: Chuck McKinnon, International Business Machines Corp.; John J. Griffin, American Airmotive Corp.; H. J. Hardin, Union Carbide Corp.; Ed Wild, Union Carbide Corp.; Dale B. Olsen, Aurora Gasoline Co.; R. C. Conley, Panhandle Eastern Pipeline Co.; B. J. Harriman, Grumman Aircraft Engineering; C. J. Lund, International Paper Co.; G. T. Fleming, Sears, Roebuck & Co.; Richard L. Thomas, Levingston Shipbuilding Co.; Richard Rigg, Owens-Illinois Glass Co.; Torch Lewis, Thatcher Glass Mfg. Co.; Regis J. Stevenson, Scott Aviation Corp.; Wm. T. Curdts, III, Flight Research, Inc.; Robert B. Meyer, Linden Flight Service, Inc.; Mike Murphy, The Ohio Oil Co.—all received a set of eight specially made aviation glasses.

In order to let the "gals" of NBAA representatives know they are welcome at the Annual Affairs, Mrs. Dorotheanne Horton, Horton and Horton, called a "coffee" at the Cosmopolitan Hotel in Denver and discussed the setting up of a Women's Program for the 1958 meeting. In the near future the NBAA Representative will receive through the mails a questionnaire to be given to the "women folk." Start working on the "men folk" now, girls.

As the old saying goes—Never underestimate the power of a woman. The Women's Aeronautical Assn., Wichita, Kan., (the only one of its kind) was well represented at NBAA's Meeting. Mrs. Fred Wallace, pres., Mrs. Ralph Harmon, Mrs. Hazel D. Jacks, Mrs. D. E. Burleigh, Velma L. Collins, Margueritte Lee, Mrs. Lyle Parmely and Lucille Studer all witnessed the presentation of the WAA Third Annual Business Flight Safety Trophy to Mr. C. E. A. Brown, director, State of Ohio Aviation Board.

Am sure all of you agree with us, that Al Ueltschi, pres., Flight Safety, Inc., presented NBAA with a beautiful "MISS BUSINESS AVIATION, 1957." Mona, you were well deserving of the title. We were all sorry that Pat Walker, "MISS BUSINESS AVIATION, 1956," Delta Drilling Co., Tyler, Tex., was unable to be with us.

See you next month.

"C. M."

Greenhouse Patter

By "Torch" Lewis

DENVER: Meant to write these memoirs directly after NBAA but caught the Flu Manchu from Henry Boggess at the Cosmopolitan. Couldn't have caught it from a nicer fella but he can keep it next time. The Annual Meeting was very well attended, most enlightening and socially, as always, a huge success. Enough has been written about this meeting already so I will only observe that the meetings improve as we draw upon experience, and that Igor Sikorsky —funnier than three Gregory Ratoffs.

MEXICO CITY—ACAPULCO: If it's high adventure you seek, slip aboard a Mexican Airlines Convair from Mexico City to Acapulco with 42 pasajeros aboard. Your adventure starts at take off because the airport is over 1,000 feet higher than gross wt. single engine en route for a 240. Seems like they used METO power for half the flight and we were hoping and praying that one of the fans wouldn't cease whilst crossing the afternoon assemblage of cumulus granite.

So you land at Acapulco and disembark with a sigh of relief (pilots are the worst type of passengers anyway) but the adventure is only half over. There is a paved goat trail for fifteen of the eighteen precipitous miles between the airport and the nearest rum collins. If you have a weak stomach it behooves you to make this run with blindfolds down and locked. Every one of those Acapulco drivers thinks he is FANGIO at the MILLE MIGLIA. To add spice to the run, from time to time great boulders dislodge from the mountain and carom down the road like a huge bowling ball.

The Acapulco divers are men born without fear. They dive from a ledge high enough to make your nose bleed into little more than a damp sponge moistening the sides of the two cliffs framing it. It is said that no Americano has dived and lived to tell about it. My lack of desire to sully such a record overcame my patriotic instincts so I bolted my lime smash and departed. Finished the run with a case of the green apple two step, a penalty exacted upon me because I violated my stomach by drinking MILK. So when yer in Mexico do as the French do. "Ne bouvez pas du lait." [ED.: Never drink milk]

DENVER: Footnote to NBAA meeting. Found a third subject which pilots like to talk about. Boats. Surprising number of throttle jockeys are boat nuts.

ROCHESTER—Friend of ours, (the only Early Bird with an ATR) allows as how he just isn't going to use La Garbage Airport anymore when its IFR. He says the delays are much too long and its quicker to use White Plains or Teterboro. This of course is true—everyone around here is aware of it but some of you western and southwestern birdmen who are non-stopping to New York area take heed. Use an airport west of the Hudson River. EWR, TEB, HPN.

Heard a new Sputnik joke. St Peter opened the gates and saw a man standing there. St Peter said,
"What's your name?"
"Marshal Zhukov," was the reply.
"How did you get here," said St Peter. Zhukov stared at St Peter coldly and said, "Why I flew, of course."

WILBROD would like to know how come when the weather is CAVU the weather teletypes reproduce perfectly but when the weather is STINKO the teletype is garbled and your destination is missing.

No-Knock Piston Engines

Piston engines may soon be in a competitive position with turboprop powerplants by using a new anti-knock compound developed by the Ethyl Corp.

The compound, which is an organic derivative of manganese, has been tested by a major aircraft engine manufacturer. New reciprocating engines could use this improved fuel to increase power 20% and put piston airlines in the 400-mph class, reports Planes, official publication of Aircraft Industries Assn.

...the only business aircraft in its class licensed in AIRLINE TRANSPORT CATEGORY CAR 4b

LEARSTAR *is unmatched in every measure of safety and performance* **PACKARD**

Where do pilots come from

(Continued from page 16)

professional background fits him for a significant role in the company's operation.

A typical order was from a chemical manufacturer for a pilot with a background in chemical engineering. The man was to undertake high level assignments for the company without the need for a top official to accompany him.

To provide access to the detailed personnel data in the company's files, IBM was added to the operation about four years ago. Up to that time every job order required a lengthy search of the files. By the time the suitable people were found, more often than not the job had already been filled.

"If we hadn't put our records on punched cards," Binder said, "current volume might require some 40 to 50 clerks constantly pouring over the files. I suspect that we save every month on office rent alone enough to pay the yearly rental cost of our IBM data processing machines."

Aviation job requirements being what they are, the agency's personnel forms call for the most detailed information on an applicant's experience and background. The forms show readily all the important data needed on an applicant. Formerly, the search for a candidate with suitable training and experience had been a needle-in-the-haystack proposition.

Now, a code sheet is prepared from the personnel forms of each applicant. The code sheet guides the keypunch operator. It codes into the punch card all the most essential data detailed by the applicant. Coding is always done by the same person for consistently uniform classification.

To find candidates for an aviation job, punched cards are sorted on an IBM 082 sorter. Binder says this equipment is highly efficient for classifying data suitable for any civilian job in aviation. PEA has on order an IBM 101 electronic statistical machine with an 80-column sort to make it possible to set up in a single pass the ideal man for any aviation job requirement.

Despite the speed and automation of classification and selection of air and ground personnel, the agency takes pains never to lose its perspective. Binder says, "We are dealing with people, and we never lose sight of that fact."

A Major Price Reduction Of Speed Control Equipment

Announced by the Safe Flight Instrument Corporation, the Model SC-12 System for single-engine aircraft has been reduced from $345 to $245, and Model SC-24 for multi-engine aircraft has been reduced from $695 to $495. The Speed Control instrument assists the pilot by identifying the optimum angle of attack and airspeed for maximum lift during the critical landing and take-off operations.

in the business hangar . . . .

■ **FLIGHTCRAFT, INC.,** Portland, Ore., completed 100-hour inspection and service on Donald Drake Construction Co.'s B-50 twin-Bonanza, also winterizing the aircraft with the installation of prop alcohol slingers.

Dwyer Lumber Co.'s D-50 Twin-Bonanza was given 100-hour inspection, was winter-proofed and had anti-icer boots and oxygen added.

Moore-Oregon Lumber Co.'s Twin-Bonanza received a new communications-navigation package installation with custom radio panel by Flightcraft.

Bear Creek Orchards' E-50 Twin-Bonanza received a communications-navigation package installation with custom "Edge-Lit" radio panel, dual ARC Omni, approach coupler and auto-pilot. Plane's pilot is Dave Holms.

Georgia-Pacific Corp. had 100-hour checks on both a Super 18 Beech and a C-50 Twin-Bonanza. Chief pilot is Roland Clark.

Philpott Corp.'s H-Model Bonanza, flown by Jack Bell, had a second Omni added.

Jackson Medical Laboratory's new H-model Bonanza had Flightcraft's dual Omni package installed. Plane is flown by Dr. Jeff Minckler and Dr. Rich Warrington, both of Portland, Ore.

Halton Tractor Co. has a new communications-navigation package unit and an "Edge-Lit" radio panel in their B-50 Twin-Bonanza.

■ **SAN JOSE AVIONICS CO.,** San Jose Municipal Airport, Calif., has installed an ARC Type 21 ADF in K-P-F Electric Co.'s E-18S Beech brought in by chief pilot Carl Hallmark.

R. M. Towill Corp., Honolulu, T.H., had their Twin-Beech flown in by Ron Hays for installation of communications system.

P. Preston Mock had dual ARC Omni, ARC Type 21 ADF, T-21 Transmitters and ARC Marker Receiver, with Edge-Lighted Radio Custom Control Panel, installed on his Apache.

Grange Co.'s two Twin-Beechcraft have received annual servicing of ARC equipment.

■ **REMMERT-WERNER, INC.,** Lambert Field, St. Louis, Mo., converted Super-92 DC-3 of the Holliston Mills Co., Norwood, Mass. The 14-passenger conversion has work tables, adjustable desks, electrical facilities for office machines, soundproofing, galley, lavatory and large picture windows as well as latest instruments, radio and electronic equipment including Collins 17L VHF transmitter, dual Collins 51R VHF Omni, Collins 51V UHF glideslope, flush type Bendix ADF loops and retractable tail wheel. John Briggs is chief pilot.

Big Three Welding Equipment Co. Super 92 DC-3 had a double engine change and propeller overhaul. Flown in by Ed Brewer.

Peabody Coal Co.'s Super-92 DC-3, had a double engine change and installation of bird-proof windshields. Chief pilot, Bob Boyanowsky.

Packer Corp.'s Mallard, flown in by Dick Turner, for a double engine change and installation of ARC Type 21 ADF.

Lake Aircraft's Custom 18 Beech in to Express Airport, Toledo, O., for engine change and relicense. Stan Bush, chief pilot.

Gardner-Denver Co.'s E-18 Beech flown in by John Belmeyer for engine change.

Burlington Mills Super-92 DC-3 in for a double engine change and installation of new landing gear doors.

Mead Johnson Co.'s DC-3 in for relicense. Pete Bear is chief pilot.

Monsanto Chemical Co. had a new paint job for their DC-3, "Prairie Wings." Ralph Piper, chief pilot.

Cleveland Brothers Equipment Co. E-18 Beech had an engine changed. Bill Bennett, chief pilot.

Trans-Canada Pipeline Ltd. had landing gear doors installed. Tom Griffiths, chief pilot.

Trostel Leather Co. is having a double engine change on their Super Beechcraft. Rick Ravitts is pilot.

Shell Avion of Canada took delivery of new R-W DC-3 with combination cargo-executive configuration. John Stuart, Ross McFee, Gordon Thorne and Harry Treichel are the pilots who picked it up. *(Continued on page 44)*

By Russ Brinkley, Pres.

The main concern of many of our well-wishers appears to be how we expect to perpetuate the OX5 Club, if we accept for membership, only those associated with the engine, previous to 1940. Frankly, no definite consideration has been given to this matter which may prompt many persons to brand the organization as a "last man's club." If that be our fate, we refer to our members 40 to 85 year age bracket, and predict that we still have many years to go.

As for some of our senior members, who have passed the 80 mark, there is Roy Knabenschue of Arcadia, Calif., a grand old man of aviation whose flying exploits date back to the first days of powered flight. An enthusiastic OX5er, Roy still manages to go aloft in just about every new airplane that comes along, including jets. Roy first gained fame with powered balloons and was later Exhibition Manager for the Wright Brothers from 1909 to 1911.

Another aviation personality in the top age bracket is Henry W. Kleckler of Bath, N. Y. He is the Daddy of the OX5, which he developed after he joined Glen Curtiss, in 1907. Kleckler's first assignment was to build a Curtiss engine for Glen's world speed record motorcycle. The modified engines later found their way into the early pushers and later into World War I trainers. Kleckler also had much to do with the design and building of the Army Jenny in which wartime airmen earned their wings.

Aviation history of those early days, records the exploits of such other OX5ers as Charles Kirkham, a pioneer engine expert with Glen Curtiss who is still prominently identified with aviation powerplants. Traces of his ability are apparent in just about every engine used in aviation today.

Still going strong after well over 40 years service in flying are: Wally Timm of Los Angeles, who has been building and flying his own aircraft since 1910; Ernie Hall of Warren, Ohio, who has missed few days of commercial flying since he earned his wings in a pusher; Russell Holderman, another pusher graduate who nowadays pilots multi-engine craft, as head of the Gannett Newspaper fleet, at Rochester, N. Y.

Billy Parker of Bartlesville, Okla., on occasion, still flies a 50 horsepower pusher, he first built in Colorado, in 1912. Because he wasn't aware that the low powered craft was technically not capable of flight, in the high altitudes of Colorado, like the bumble bee, he kept right on flying. Charley Meyers of Iowa encountered similar setbacks but he went on to design the famous Waco 10, the Waco Taperwing and later, the Great Lakes. As a nightcap, he built up 26,000 hours as a Captain for Eastern Airlines. Basil Rowe accumulated the greatest number of flying hours in any logbook, while serving as the first PAA pilot, until his recent retirement.

These are but a few of the senior members of the OX5 Club. Books could be written concerning the accomplishments of OX5ers who are less bald and less gray at the temples. How does one go about in an attempt to perpetuate such a breed, steeped in the tradition of the OX5 era?

Longer Runways For Municipal Airport

There are some changes being made at Stockton Municipal Airport, Calif. Runway 29 is being lengthened to 7400 feet. Each thousand feet will require about a year to be completed. Within two years, Stockton will have its own ILS. The main runway 29 is now 5400 feet long.

Airspace Segregation

(Continued from page 14)

of additional airports will only complicate the air traffic control problem. On the other hand, the creation of separate runways on the same airport to handle some classes of traffic may not always be feasible, especially if such runways are to be designed to provide no interference to controlled operations on other runways, under all weather conditions. The fact that local government agencies are the primary parties in airport construction is also complicating.

It is the CAA view then that it is necessary for safety and efficient operations to establish segments of the airspace wherein positive air traffic separation will be provided. I have already mentioned our high-altitude control plan as a step toward our objective of positive separation of all aircraft, regardless of weather conditions, above a designated altitude.

Further, we believe that positive separation of aircraft on high density routes will be necessary at the lower altitudes, and we are working on plans to provide this service.

There is no telling at this time how far it will be necessary to go in the segregation of airspace and the positive separation of traffic. The fact is that there is little choice in the matter. The decision is being made for all of us every hour of the day, every day of the year by the users of the airspace in the demands for air traffic control services. This demand is increasing at an almost fantastic rate. For example the number of instrument approaches in the fiscal year just closed were up 47 percent over those in fiscal year 1956. Fix postings handled by our air route traffic control centers jumped 22 percent and numbered 27.9 million; aircraft operations were 16 percent higher at 23.7 million and aircraft contacted showed a 15 percent rise.

We have tried to keep abreast of these heavy increases in traffic by expanding the capacity of the air traffic control and air navigation systems. In doing so we have laid the foundation for whatever addition segregation and positive control will be necessary for safe operation by all segments of the flying industry.

The recruitment of close to 2,500 people for air traffic control work in the last fiscal year is another example of how we are preparing ourselves for the increases in traffic we know will come in the next few years. The recruiting program is being matched stride for stride by our training program. Approximately 1,400 new personnel went through our air traffic control school at Oklahoma City; another 800 were assigned to field facilities for training and 3,000 others were given advanced training at field facilities. This training I have mentioned is just the start on a two-year long process required to turn a new employee into a finished controller.

The office of Air Navigation Facilities spent $75 million last fiscal year for the purchase of facilities and equipment necessary for our air traffic control function. They are geared right now to spend over double that amount in fiscal 1958 appropriations. We are struggling at the moment to keep even a little ahead of the traffic increases. But when the full effect of our fiscal 1957 and 1958 procurement, recruiting and training programs come in to play at the end of the procurement leadtimes and the personnel training time, we will be in a much better position to say where we are going on the problem of airspace segregation, and positive separation of traffic.

While it might seem that in our preoccupation with extension of the positive control concept we tend to overlook the needs of users of the airspace not desiring positive control service, this is not the case. We are very conscious of the severe limitations that would be imposed on private flying, for example, if the rules and procedures which are developed do not take into full account the flight activities of this group.

We also are mindful of the advantages in safety and efficiency to be gained by the private flying group in segregating certain military or civil transport operations so that they are not a menace to the private pilot.

Having committed ourselves to a policy of further segregation, it is the responsibility of CAA to continue to take into full consideration the needs of each class of airspace user in the development of any plan for segregation of air traffic or airspace, and to work closely with user representatives in arriving at reasonable methods of applying segregation.

SAFETY DIGEST

RICHARD W. GROUX, *Assistant to Executive Director NBAA*

Compiled and edited from leading air safety publications issued by military, naval, airline, government agencies and from private and business pilots' experiences.

Winter Weather Incident

Departure of flight delayed because of ATC hold. Weather 34°F and light to moderate snow, ceiling variable from 800 to 400 feet, visibility sliding from ½ to one mile. Upon boarding aircraft (DC-7) made a preliminary ice and snow accumulation observation and was satisfied that leading edge was clear but some snow had accumulated on top of wing but was melting and flowing slowly, leaving me confident it would flow off as we taxied and took off.

Considerable delay was encountered at the terminal, engines were started 40 minutes after crew had boarded. Taxied out for runway 13L; held short time before crossing 13R; completed runup and received airway clearance. At this time we again made a visual check from cockpit and noticed several ridges of snow, apparently caused by dragging the gas hose over the wing. These ridges were estimated one to two inches high. As we were making this observation, tower advised us to make immediate takeoff and expedite as an inbound flight was a mile-and-a-half out on final.

Takeoff gross weight was something over 112,000 lbs.; wind WNW and starting to become strong. Takeoff was normal but wind somewhat gusty and was nearly directly cross; so power was reduced and flaps retracted somewhat later than normal. At about 150 ft. above field level flaps completed retraction and severe buffeting started. Immediately ordered full power, turned on wing and prop deicers and leveled out to gain speed—at 160 knots indicated buffeting had lessened to moderate but still severe enough to cause a settling and loss of altitude.

At this time and at about 170 knots indicated, we cracked flaps and buffeting immediately stopped, normal climb performance was reinstated and we proceeded to about 2,500 ft. MSL at that configuration but with intermediate power, then nosed down to level flight, retracted the flaps and at 190 knots indicated all buffeting stopped and normal performance was experienced. Still observed ridges of snow but they dissipated by sublimation during remainder of climb.

The temperature had dropped during the delay from 34°F to 29°F.—ALPA's Technical Talk for Pilots.

Safety System Scheduled for Test

A new technique that removes the hazard of fuel fires in civil and military aircraft, from take-off to touchdown, is to be flight-tested in a specially-modified Canberra jetbomber.

System works on principle that if there is sufficient proportion of nitrogen gas in air space inside a fuel tank, it will prevent oxygen in the air from supporting combustion. The new technique offers complete protection from fuel tank explosions caused by lightning striking the aircraft in flight, or from enemy action in combat.

There is no high weight penalty for this protection. Fuel tanks have to be pressurized with air tapped from the aircraft's engines, and nitrogen is simply injected into this air in correct proportion to produce an inert gas inside the tank.

Nitrogen is carried in liquid form in high-vacuum insulated container. This is claimed to be the lightest and simplest explosion suppression system yet devised. It weighs 15 lbs. per 1,000 (Imp.) gallons of fuel carried. Takes up so little space that liquid nitrogen container can even be housed inside fuel tank, displacing less than one quarter of one per cent of the total fuel volume.

Liquid nitrogen is fed from the container to a swirl atomizer built into pressurizing air supply line from engine to fuel tank. Heat of the air causes nitrogen to vaporize and form nitrogen/oxygen mixture, correct proportions of the gases being maintained by a ductstat control which adjusts the oxygen content according to temperature of air entering the tank.—NAVAL AVIATION NEWS

Forecaster to Pilot

By: Maj. Horace W. Meredith, USAF
Offutt Weather Central

Aircraft icing is one of the king-sized headaches of aircrews. You can best insure safety and maximum operating efficiency if you

—understand the meteorological aspects of ice;

—know the effects and corrective procedures for each type of aircraft icing;

—keep thoroughly familiar with anti-icing and deicing devices for your aircraft.

Weather produces icing in many ways. Turbulent air suspends supercooled water droplets above the freezing level in thunderstorms, over rough terrain, and over warm water surfaces. These areas give the heaviest icing in instrument flying conditions. Glaze ice forms in the dry cold air under a warm front where air temperature is near or below freezing, and rain drops spread over the aircraft and freeze due to the cold temperature and to additional cooling caused by partial evaporation. This icing is normally avoided by climbing to an altitude that is in the warm air of the warm front. Air in carburetors undergoes extreme cooling which may result in ice formation. This type of icing most readily forms in clouds and rain but may occur in clear air that is near freezing and humid.

Frost is formed upon an object that is cooled to below freezing in moist air. Frost may occur on parked aircraft at night by radiational cooling, or it may occur when an aircraft is cooled at high altitudes and lets down quickly into moist air.

Wet snow that accumulates on parked or taxiing aircraft may result in serious icing by freezing to the aircraft on takeoff, especially where a temperature dew point spread induces evaporational cooling.

Some of the effects of icing and the recommended corrective actions:

1. Stalling speed increases as structural ice decreases lift by changing the airfoil and increasing drag and gross weight. You must maintain a safe margin of airspeed, especially in critical maneuvers such as takeoff, climb, turns, letdowns and landings.

2. Dynamic efficiency of the propeller is lowered when ice changes the propeller blade profile. Deicing is aided by alternately increasing and decreasing rpm so that air friction and propeller vibration can act to break off ice.

3. Conventional engines fail when ice in carburetor hinders operations. Adequate carburetor heat should be maintained, although in dry, very cold air that is definitely clear of clouds, the heat requirement may be reduced. Care must be used during takeoff to avoid excessive heat that would cause detonation and engine failure. The pendulum swings both ways—too much and too little: use heat, but monitor its effect on the engine. That's what copilots and FEs are made for.

4. Air pressure instruments, such as altimeter, airspeed and rate of climb, fail when ice clogs pitot tube or static air lines. When suspecting such icing rely on the artificial horizon and power setting for attitude indications.

It is your responsibility to know just what anti-icing devices are available for the aircraft you are flying and to establish just what capability they give you for handling ice. A primary safety factor is your alertness to apply anti-icers at the proper moment on your flight.

Letting down into moist air in a cold airplane is a natural for ice formation, and slow airspeed in icing is opposed to a basic principle of weather flying safety. Let the mistakes of the past be the challenge for the future for you to keep flying techniques and anti-icing know-how up to date for flying safety.—COMBAT CREW—SAC—USAF

Profile of the Men Who Fly

By Capt. F. E. W. Smith
Canadian Air Line Pilots Association

What kind of man it takes to maneuver today's heavy, complicated aircraft, while dealing with variables, inaccuracy of data, mechanical breakdowns, crew problems, etc., is described in a series under "The Air Line Pilot" title. It has attempted to explain an air line pilot's job in terms other than as an airplane driver, to sketch some of the relationships which are integral to it and some of its problems.

In review, the series started with a definition of an air line pilot as a professional man and not as a technician or tradesman as some choose to regard themselves. Ethics followed naturally, for these are cornerstones upon which professions are built. The occupation was then described as a task of command requiring decisions of vital importance. Some of relationships an air commander must deal with were touched on. An article on weather outlined some of difficulties of forecaster with intent of warning the new pilot against taking briefing too literally and of persuading the old pilot to be humane in his judgment of those who try to outguess the fickle movements of air. An article on the dispatchers described their need and use in an attempt to help pilots to a more mature relationship with them which would neither demand the degradation of dispatch to office boy level or conversely hand the reins to their willing hands. An article on safety developed a concept of it as "a way of going" and further defined the pilot profession as one of calculated physical risk. And finally an article on the "books" tried to show that while these warrant respect and obeisance, there are times when a pilot must make rules of his own to fit his circumstances.

The Pilot's Concern

The choice of subject matter which has been included may not fully cover the nondriving problems of the pilot, but at least shows that pilots have much more on their minds than the primary control of equipment.

Of course, ability to fly is basic. It has often been thought desirable to divorce the command requirements of flight from the actual flight control by having a commander on board, selected for executive ability and not necessarily a flyer, who would make all decisions and to whom the pilots would be subordinate. This has never been successful and will never be because, in airman work, the executive side of the operation is so completely woven into the steering side that the two cannot be separated. The pilot must be able to do both sides. He must find time to consider and make decisions while involved in intricate instrument procedures or control difficulties. His flying skill must be so highly developed that he is able to do this part of his job with but part of his brain and have room left for other matters, which may range from minor passenger or crew problems to matters of import, such as points of no return or abandonment of the operation. As the control of the aircraft, under bad conditions, is a task requiring a great deal of concentration, his need of ability to think beyond the control imposes a heavy load on him. The only way it can be lightened is to become increasingly expert in technique, making this part of the total load easier. This is perhaps why pilot training tends to concentrate on actual flight, why schooling takes up practically all available training time and so forces the equally important executive side to the background and a hoped for native ability.

Analyzing The Pilot's Role

What kind of a man is the pilot who can expertly maneuver the heavy and complicated aircraft of today and deal simultaneously with variables, inaccuracy of data, mechanical breakdown, crew problems and anything else which comes up? Are there personality characteristics common to all pilots which are necessary if they are to succeed in this very demanding occupation? The most immediately noticeable one is that

pilots are basically individualistic. They look different, come from any background, have widely diverse interests, seldom agree with each other on how to do their job or on anything else. On any subject under pilot discussion there may be as many points of view as there are pilots in the group. This individuality, distressing to the management and to council chairman types, is an essential characteristic of the pilot, for no man without a mind of his own can be relied on on an aircraft flight deck.

Indicated by individuality and common to all pilots is intelligence. This is not an occupation for the mentally dull, for it takes an able mind just to learn to fly, and an abler one to fly and think. Usually the pilot is especially inclined to the mechanical and mathematical and always has a mind capable of keeping track of many details and of performing repetitively without serious mistake.

Another common characteristic is a strong navigational sense which is a difficult thing to explain but is real and is possessed by all good pilots. This is not so much an ability of reason and applied mathematics as it is something akin to the bird's instinctive knowledge of position. It is this which enables pilots to have a good idea of where they are, after a long session of dodging thunderstorms or of flying without radio aids and which often enables them to disagree successfully with the navigation data offered them.

Good reactions and quick, accurate troubleshooting skill is necessarily possessed by all competent pilots. They are basically cautious men who have, however, a common ability to calculate a risk and a cool nerve in emergency. Finally, the pilot has the ability to control himself when under great strains which may be produced by incidents ranging from the inconsequential up to a ditching situation or worse.

What Makes a Pilot?

These few characteristics are common and essential to all pilots. The question now arises: Is the profession one, which almost any interested person can succeed in or is the necessary combination of personality traits comparatively rare? This is a difficult question to answer specifically, but one of considerable interest because of the usual pilot belief that anyone can do his job, he winning it by virtue of a successful medical examination and for no other reason.

It is agreed there may be many men who are admirably suited to this work but who are disqualified by medical defect or over age. It is not agreed that the total group of potential pilots is a large one. An industrial psychologist, surveying personality requirements, could likely say with fair accuracy how many men per thousand are possible pilot material. An empirical answer is closer at hand through observation of industry experience.

There are three basic principles in human behavior which are important to the answer of this question. First, known to all advertisers, is the people will usually get what they have a desire to get—somehow—entirely or in part. Second, that people have no desire to try to do things for which they are not suited. Musicians are musically minded, artists artistic and athletes athletic. Third, if people make a mistake and seek to do that for which they have no talent, they back away as quickly as they can.

Looking at the civilian schools it is clear that many wish to learn to fly and are able to pass the medical requirement. But many who start, drop out while being trained. Some are washouts, of course, but others find flying not very interesting, or too expensive, or have some other excuse. Loss of interest indicates failing of desire which occurs when incompetence is discovered (usually long before the instructor discovers it). Lack of money is just another way of getting off, for advertisers will say the money would be found if the desire existed.

The desire should be strong. We live in an air age and could expect large numbers of young men to be interested in an aviation career. Piloting is the best job in aviation, paywise, in working conditions and in prestige. Air Line flying is the best flying job in aviation, with the possible exception of a very few, highly favored, executive

pilots. One would think air lines would be deluged with applications for pilot jobs. The fact is they seldom have so many that they can pick and choose exactly as they would like. The belief that anyone can do an air line pilot's job provided he can pass a medical, is not borne out by the competition in employment opportunity. Flying is a very attractive way of making a living. It seems quite safe to state that if the average young man felt he could do the job, the supply of candidates seeking employment would be much larger than it is. It is quite true that if a man is not suited he is not interested.

Few Men Suited To Fly

Wartime memories bear out the contention that very few men are really suited to the air. Then, when most people were in some uniform or other, just about everyone who could possibly make a go of flying was put to it. The majority of these wartime pilots felt so ill at ease in the air they lost no time getting out of it on discharge. The few who took to it are almost all in aviation today in one way or other and most as airmen.

Pilots have no reason for feeling the medical rating is their only difference from the general populace. They are entitled to feel proud, not only for their healthy bodies, but for possession of above average intelligence and a combination of personality traits which enable them to do their jobs and which will stand them in good stead in any walk of life. But the pilot group in general feel quite insecure about themselves, worry about what they might be able to do if they were medically grounded, and about the possibility of having to live, from early middle to ripe old age on the product of a retirement fund. As a class we probably put a larger proportion of income into savings, life insurance and retirement plans than any other producing group and buy extensively of sickness, accident and loss of license protection.

The usual explanation of this sense of insecurity is the ever-present medical re-examination and the fact that medical requirements may be changed at the whim of the doctors and company executives. But while the present medical policy keeps entrance standards as high as ever, it does relax them, for older pilots to try to provide a full working life for those engaged. It seems that pilots are valued for their experience more than they are for their health. This makes sense. The air lines wish to employ men who can fly their airplanes safely for many years. It is pretty difficult to interview an applicant, even with aid of psychological tests, and be sure the man selected will suit. There is wastage among probationary first officers. A man is a captain for quite a while before a company feels really confident of its choice. Thus, it is better to hang onto men who are tried and proven than to replace them at the first opportunity.

The Pilot's Insecurity

Every pilot in the business knows the medical policy and probably does not really feel it will change, yet the feeling of insecurity persists unabated. Perhaps the usual explanation of its cause is not the correct one. It is suggested that pilots may feel insecure because they work out of man's natural element. In a very real sense their lives are at stake every time they take out a flight. Their basic inadequacy, their smallness in comparison to the forces they expect to manage—including the airplane they are flying—is made constantly apparent to them. A fear exists and yet there is no reason for fear. The pilot is doing something he has done many times before, something for which he is highly trained and well suited. The weather is good, the trip routine, the equipment excellent and well maintained. Could it be that pilots transfer a healthy fear of the air into a fear for their futures? Is this why we are such good savings and insurance customers and why we are so convinced we must expect early retirement? Do we wish to leave the air before it finds us out?

No one can answer these questions, of course, but one may speculate on the effect of the pilot insecurity feeling on the profession generally. Like the other professions pilotage is a comfortable status to attain once line captain rank has been reached. The captain is on a sort of plateau. He can stay there the rest of his life if he wishes and not suffer from a frustrated ego. Or he may go higher up the peak of ambition if this is what he wants. He can have a minimum interest in his occupation without fear of being pushed downward, or he can express a keen interest without being forced to climb higher. The rewards are good and he cannot proceed beyond line captain rank without giving up a lot in order to get more.

Doctors, lawyers and to some extent engineers are on this same plateau. Many of them, being intelligent and very interested in their occupation, express their vitality and interest in work which advances the achievements of their profession. The medical doctors, for example, develop most of the new techniques and discover many of the drugs which advance medical science. It is right that pilots, having attained a similar status, and being intelligent men who have obviously a very great interest in their occupation, should act in similar fashion and be active in the development of the aviation business, which in itself is one of the most rapidly changing of man's many activities.

The extent of pilot participation in aviation development is going to determine the degree of advancement of piloting as a profession and occupation. Most pilots whether prepared to do anything themselves or not, do feel they are the key figures in the business and should have much more say in its operation and development than they do. There is a fairly widespread opinion, which the writer shares, that pilots could and should control the licensing of pilots in much the same way that doctors license doctors, lawyers license lawyers, etc. The material advantages of such an arrangement are quite obvious. So too are the advantages of prestige which would accompany such a privilege. But long before such could take place, it is necessary for pilots to demonstrate they are in fact the key members on the air line team. This cannot be done by proclaiming or by limiting interest to the flights assigned. It requires a demonstration of leadership in the development of aviation. More pilots than at present must be willing to study the problems of the business and apply to these their special knowledge, special skill and time-space perception.

A Summation

This brings both this article and the

PRESIDENT'S PILOT TESTS TRECKER GULL *at Washington National Airport. Col. William G. Draper showed particular interest in the versatility of the Gull, a twin-engine amphibian. Demonstration flight was given by H. A. H. Cook Associated, eastern distributor of the plane. Colonel Draper tested the plane in line with his policy of keeping abreast of significant new development in the light air transport field.*

series to its conclusion. The intent throughout has been to widen pilot vision of their occupation and themselves. It is hoped the work will accomplish this purpose among some and that it may be useful as a guide to new pilots whose ideas and habits are not yet fully formed.

A clear, precise, understanding of "what you are" is vital to success in any field of endeavor. Without it there is nothing but confusion, wasted effort, poor output. While the pilot role might be obvious—to drive airplanes—what he shall be while he drives them has been in confusion ever since the business started and this confusion does affect how well he "drives" his aircraft. These articles have tried to prove the air is a place where only professional captains may find full success and to show that everyone in the business is in reality a professional "captain" even if he himself energetically denies it. Some may feel the pilot status has been overglorified, the difficulties of air line flying magnified. The writer does not think so, but if such has been done the error is on a good side. Generally speaking, it is better to think too well of yourself than too little, for no one who deprecates himself has ever done anything or gone any place.—THE AIR LINE PILOT

Mixing JP-4 and "Gunk" for cleaning airplanes is plenty hazardous. You can be in a . . .

Big Blow

Some of the folks in the know seem to think that some of our undetermined accidents may have resulted from exploding fuel vapors trapped in various parts of airplanes. Vapors can cause an explosion if ignited, and tests have proved it.

Some troops at the Japan Quartermaster Petroleum Depot decided to do something about this problem. According to reports, they set up a traveling "road-show" which made appearances all over Japan. Complete saturation was enjoyed in the area—Army, Navy and Air Force.

Simply, the road-show featured a lot of explosions. Demonstrators exploded small amounts of various types of fuels, illustrating the dangerous mixtures. The prime reason for the tour was to demonstrate, graphically, that certain types of fuels mixed with "gunk" could cause accidents.

It appears that many flight line people were mixing up a batch of cleaning material and then applying it vigorously to airplanes. The demonstrations pointed out that the flash-point (that temperature where vapors of a product will ignite) varies with altitude and pressure. It was further pointed out that there are many ways for cleaning fluids to get into different parts of the body, wings and control surfaces.

As you know, there are hundreds of rivets, inspection plates, hinges, etc., which can provide ready access to petroleum washing fluids. Because the flash-point varies with altitude, vapors may not ignite on the ground, but they will explode at altitude.

Then too, we must remember that the temperature naturally is higher near the engine, near cabin heating elements, etc., so that vaporization readily can occur. All aircraft have electrical connections which can produce sparks under certain conditions. That old bugaboo, static electricity, certainly can provide a source of ignition.

The people on the "road-show" discovered a fairly interesting fact. They talked with many maintenance men who did not believe that plain old "gunk" would do the cleaning job properly. They stated that it was necessary to use either gasoline or JP-4 mixed with the "gunk" to do the job.

Well, mebbe some scientists can develop a better grade of cleaning solvent. Let's let the boys in the chem labs do the mixing!—AIRCRAFT ACCIDENT AND MAINTENANCE REVIEW USAF

Proposed Airport Sites

Proposed establishment of civil airports approved at:

1. Libby, Montana
2. Alamogordo, New Mexico
3. Twenty Nine Palms, California
4. Oceanside, California
5. Lancaster, California

■ **POTTER AIRCRAFT SERVICE, INC.,** Lockheed Air Terminal, Burbank, Calif., completed a double engine change, 100-hour inspection and a new cabin headliner in the Edwin W. Pauley Lodestar. Chief pilot, Milt Keyes; Co-pilot, Chuck Ryno.

Home Oil Co. Lodestar in for de-icer boot installation and instrument panel modification. Chief pilot, Don Douglas; Co-pilot, Art Gillard.

Merritt, Chapman and Scott Twin-Beech in for a 100-hour inspection. Pilot, Frank Walker.

Lockheed Aircraft Service Cessna 310 received a 100-hour inspection. Pilot, Wynne Murphy.

■ **EXECUTIVE AIRCRAFT SERVICE,** Dallas, Tex., has completed work on Union Producing Co.'s DC-3, piloted by E. P. "Cotton" Jetter Jr. EAS changed engines, installed Maximizer power section baffles, cowling modification and exhaust system, installed 200 amp generator system, Janitrol heater and Barber-Coleman automatic heat controls and radome.

E. W. Brown Jr.'s DC-3 was brought in by R. F. "Wimpy" Neel for a right engine change, periodic inspection.

Dow Chemical, Freeport, Tex., sent its DC-3 in for new latches on radome. Pilot is Ted Merchant.

Gulf Oil's Lodestar, piloted by Stein Lee, had a 100-hour inspection, Edison fire detector system and ARC ADF installations, and landing gear actuating cylinder overhaul.

Texas Gas Transmission's DC-3, flown in by Kenneth Jolly, had engines changed, a periodic inspection, and had installed new anti-icer system, short exhaust stacks, 200 amp generator, sealed beam landing lights, hi-intensity wing tip lights, ARC course director, Barber-Coleman automatic heat controls and overhauled all fuel tanks and Janitrol heater.

■ **AIRESEARCH AVIATION SERVICE DIV.,** Garret Corp., Los Angeles International Airport, Calif., completed installation of its Maximizer kit on the DC-3 of Tobin Aerial Survey, San Antonio, Tex. Also installed are de-icer boots, large baggage door, new headlining, cold air system and exterior paint job. Bill Hubbard is chief pilot.

Sears Roebuck, Los Angeles Div., had its DC-3 equipped with de-icer boots, an AiResearch aileron boost tab and the Maximizer aileron gap strip. Pilots are George Fleming and Paul Caribelle.

U. S. Industries' Convair 440 was delivered after completion of a custom interior, exterior paint job, installation of wing fuel tanks, engine analyzer and an integrated instrument system.

Arizona Public Service pilot Paul Petris took their D-18 Beech in for dual heaters and exterior painting.

Garret's own DC-3 "Queenie" received Maximiber kit installation, interior refurbishing and wing removal and reinstallation.

■ **PIEDMONT AVIATION, INC.,** Winston-Salem, N.C., overhauled propellers and gave 400-hour inspections to two DC-3s of Management Services. Chief pilot is "Hap" Wilson.

Noland Co. Lodestar, flown by Karl Styne, chief pilot, had an engine change and new de-icer boots installed.

Corps of Engineers' DC-3, flown by Ed Haffy, had a 400-hour inspection.

Alcoa DC-3 flown by Dave Flanner, chief pilot, had fuel tanks changed and new de-icer boots installed.

Tennessee Eastman DC-3 flown by Leo Boyd had a 100-hour inspection and Maximizer cowling and cylinder baffles installed.

Sears Roebuck DC-3, flown by Bill Dameron, had de-icer boots installed.

R. J. Reynolds DC-3 had an engine changed. Company pilot is Herb Drew.

C. J. Langenfelder and Son had controls changed on their DC-3, flown by Jack King, chief pilot.

S & W Cafeterias chief pilot, Lawrence Gesse, flew the company's DC-3 in for new tires.

Detroit Steel Corp. DC-3 had a landing gear overhaul and short stack installation. Pilot is Bill Ashton.

Bendix Aviation, Detroit, Mich., had their DC-3 in for wheel-well doors, short stacks, wing overhaul and fuel tank overhaul. Pilot is Spike Brooks.

■ **HORTON AND HORTON CUSTOM WORKS, INC.,** Fort Worth, Tex., refinished a Tennessee Gas Transmission Cessna 310 to "match the fleet."

Baroid, Houston, Tex., had the 18th "Gold Crest" interior in their Aero Commander 680. Pilot is Bill Miller. Natural grasscloth headlining, gold and white "cloud" seat fabric, gold scotch grain leather and "woven wood" draperies are highlighted by gold plated screws, washers and jeweler's gold engraved crest.

Moran Drilling Co., Wichita Falls, Tex., refreshed their D-18 Beech interior with grey gros-point frieze seat conversions, grey tweed carpeting, printed linen draperies. Pilot is Hardin Miller.

Southwest Airways, San Francisco, Calif., had 12 Lockheed seat frames covered with brown "silver-flecked" fabric, blue irridescent leather trim.

Bell Helicopters' "J" Rangers were delivered with custom interiors to Dennis O'Conner, Victoria, Tex.; Minister of Public Works, Cuba; Cully Weadock, V.P., Chesepeake and Potomac Airways, Baltimore, Md.

■ **VAN'S AIR SERVICE, INC.,** Winona, Minn., made 100-hour inspection and installed radios on Marathon Corp.'s Aero Commander.

DeKalb Agricultural Assn.'s Commander was given a 100-hour inspection

and radio installation.

Gisholt Machine Co.'s E-18S Beech received a 100-hour inspection and radio installations.

Ray O Vac Co.'s 680 Aero Commander was given 100-hour inspection. Pilot is Bill Allen.

Shell Oil Co.'s Bonanza received a 100-hour inspection and miscellaneous maintenance.

Ipsen Industries' Aero Commander, 560, was given a 100-hour inspection. Bill Kastilahn is pilot.

Barnes and Schmeltzer, Akron, O., had a 100-hour inspection on their Temco Riley.

■ **SOUTHWEST AIRMOTIVE CO.,** Love Field, Dallas, Tex., made a 100-hour inspection, single engine change and control surface recovering of Cummins Engine's DC-3. Pilots are Bill Pruner and Phil Kaufeld.

Shamrock Oil and Gas had a 100-hour inspection on their D18-S Beech. Pilot is Tom Smith.

Aviones Commerciales De Guatemala's Apache was brought in by James W. Callaway for top overhaul and 500-hour inspection.

Ray Smith Transport had a single engine change and 100-hour inspection on the Lockheed Lodestar. Pilot is Al Phillips.

Lockheed Aircraft's Lodestar was flown from Marietta, Ga., by Jack Dunn for a 100-hour inspection.

L. B. SMITH AIRCRAFT CORP., has contracted for rehabilitation of 14 former USAF Grumman Albatross amphibious planes for use by the Brazilian government.

■ **BAYAIRE AVIONICS,** Metropolitan Oakland International Airport, Calif., installed Dual Collins 18S-4 HF units, 17L-51X VHF Communications, 51V-3 Glide Slope with 51Z Marker, Dual Collins Omni System with Omnimag and RMI indicators, Sperry C4-A Compass System, Dual Lansing Cockpit Speakers with Flite-Tronic CA-3 Amplifiers, in C-47B modified DC-3 owned by Marcona Mining Co., Lima, Peru. Marvin Freeman, pilot, took delivery.

California Standard, Calgary, Alberta, Canada, had installed an ARC-21A ADF in its Lodestar piloted by Dick Cull.

Utah Construction Co.'s Lodestar, piloted by Doug Garneau, had a 17L-6 Transmitter and Control Head installed.

Columbia Geneva Steel's Lodestar has been fully equipped with Radar, Chamberlain radome, 51R-3 Collins Omni and accessory frame, Sperry C4-A Compass System. Radar scope fitted to center of instrument panel. Chief pilot is Jim Richter.

Blackfield Aero Industries' Aero Commander has new ARC, ADF-15D Omni with CD-1 Course Director, Dare DTR-360A. Pilot is Bob Dolan.

Flying Service Operates Unicom For Oregon Airport

Klamath Aircraft Service at Klamath Falls Municipal Airport, Ore., operates Unicom for Kingsley Field on 122.8 mc.

General News

Hamilton Standard Establishes New Service Overhaul And Repair Section

A separate department of Service Overhaul and Repair has been established at Hamilton Standard, division of United Aircraft Corp. S. B. Sherwin, former chief, sales engineer-aircraft equipment, is manager of the new department.

Assisting Sherwin are Ralph H. Thornton, supervisor, Service Overhaul and Repair; Henry A. Satryb, supervisor, Service Overhaul and Repair Inspection; and Thad N. Jones, general foreman.

Fan Marker Identifications Changed In California

At Burbank, Calif., the CYC fan marker identification has been changed to four dashes to identify the NW course of Newhall low frequency range.

The HLW fan marker identification has been changed to two dashes to identify the SE course of the Newhall low frequency range.

Moored Balloon Rises 500 Feet

A moored balloon has been hoisted to 500 feet MSL on an irregular schedule from the U. S. Naval Depot on Tiburon Peninsula, San Francisco Bay, Calif., during daylight hours under VFR conditions. Balloon is silver with black stripes.

Michigan Firm To Build Helicopter

Metric Aircraft Corp., new division of Metric Tool Co., of St. Clair Shores, Mich., is assigned manufacturing rights to complete the helicopter started by the Michigan Helicopter Development Corp. Announcement is from Frank Zapala, Metric president. He adds that the full scale model is expected to be ready for testing next month.

The helicopter features contra-rotating, four blade rotors and full hydraulic controls. The contra-rotating configuration and unique rotor head mounting combine to present an unusual approach to helicopter design which promises many advantages in simplicity of control, performance and safety, Zapala said. Provision is made for electrical powered fluid pressure or manual control in case of power failure.

The design is covered by U.S. Patent N. 2,671,517 issued in 1947 to William J. Lofland and is covered by Canadian patents.

Major assemblies are complete. The present model is powered with a 750 hp, in-line engine.

WILL A TOUCH OF GLOW AVOID ACCIDENTS?

Skyways Staff Report

THE SPRAGUE ELECTRIC CO., *NBAA member, demonstrates this paint on their TwinBonanza.*

The basic problem of mid-air collision can be stated very simply: How can we make planes more conspicuous to other pilots using the same air space? Putting it another way, we need improved methods of attracting the attention of pilots to other aircraft flying in close proximity to their own.

In the advertising field, DAY-GLO colors have been called "neon in print" because they emit a distinctive glow, just as if they were lighted from within. Scientifically speaking, they do just that. DAY-GLO colors take the light waves which ordinary colors waste, including part of the invisible ultraviolet, and emit them as visible light or color. All eight of the DAY-GLO colors shown are daylight fluorescent, visible and distinguishable as to color, up to four times as far as the brightest of ordinary colors. They do not appear achromatic (white, grey or black) at extreme distances, as do most non-fluorescent colors. Furthermore, the DAY-GLO colors increase in relative brightness under conditions of poor visibility which make ordinary colors darken, as at dawn, dusk or under heavy overcast.

Earlier this year, Headquarters of the Flying Training Air Force in Texas decided to test the use of DAY-GLO plane markings as a means of reducing the number of mid-air collisions. What were the results? Let us quote from a letter dated May 20, 1957.

"In one test, a T-33 jet trainer, with only the external 'tip tanks' painted 'Blaze Orange,' was flown around the local area of one of our bases. At a time when the pilot could not visually locate another aircraft in the sky, he made a call on his radio asking anyone who saw his aircraft to give him a call. He immediately received six or eight replies from aircraft on his frequency. These aircraft reported their relative position to him; however, he still could not see them. Similar reports have been received on tests of other aircraft. On one occasion, a pilot flying at 44,000 feet altitude called one of our towers and reported something red on the ramp. He could not see the aircraft, but could see the color, and asked what it was.

"We heartily recommended that the use of this paint be considered by all private and commercial aircraft operators and manufacturers. We will be glad to furnish any information desired which we learn from our use of the product.

"We are presently preparing a directive for all bases of this Command to use the paint on trainers."

That directive was approved a few days later and the Flying Training Air Force immediately began applying DAY-GLO markings to all the T-33, T-28 and T-34 Aircraft under its command. Just recently the program has been expanded to include the T-37 Cessna jet training plane.

The pattern chosen for high visibility markings should be given very careful consideration. Naturally, the marking should be visible from all four directions as well as from above and below the aircraft. The pattern adopted by Flying Training Air Force for the T-28 trainer involves the application of 30" wide bands around each wing tip, a 36" wide band around the vertical stabilizer and rudder and application to the entire engine cowling, with the exception of an antiglare area immediately in front of the pilot. This pattern resulted from elaborate tests and it has been our observation that DAY-GLO areas any smaller than those described are relatively ineffective when viewed at long distance.

The painting procedures for aluminum surfaces are outlined in detailed technical bulletins which are available on request. The recommended procedure is being used on thousands of military planes and has proven entirely satisfactory even on leading edges of high-speed jets.

We have not had sufficient experience to date in the application of DAY-GLO to aircraft fabrics to make specific recommendations. However, several fabric-covered planes have been successfully painted with Sunbonded DAY-GLO Brush and Spray Paint. In one instance, duPont's White Preparakote was applied directly to the existing Piper paint surface and the Brush and Spray Paint and Filteray were then applied over the Preparakote.

Laboratory tests have proven that the DAY-GLO paint system does not affect the tensile strength of aircraft fabric which has been coated with clear and aluminum Butyrate dopes. Here again, when the application of the paint system to existing non-fluorescent paints is under consideration, the adhesion of the White undercoat chosen should be carefully checked on the surface in question before proceeding.

Airport markings and ground obstructions are of no less concern to pilots than other planes in the sky. All such objects can now be given extreme visibility and conspicuity with DAY-GLO daylight fluorescent color.

A test kit containing 16-ounce aerosol spray containers of a White Primer Surface, DAY-GLO Paint and DAY-GLO Filteray are available at nominal cost. This makes it easy for you to try the DAY-GLO effect on small areas of planes, airport markings, ground obstructions and convince yourself of its advantages.

Tall Tower Terrors

(Continued from page 19)

(a) *Instrument Approach Areas*
Instrument approach areas shall have the same definition and dimensions as set forth in FCC Part 17 as of this date, with the following exceptions:

SLOPE: The slope of the approach surface only along the runway center line extended shall be 50:1 and shall begin 2,000 feet outward from the end of existing or planned* runways.

NOTE: The overall plan view length and width of the approach area remains as defined in Part 17 in that it begins 200 feet from the existing or planned* end of the runways, (1,000 feet for military air bases) and extends outward for 50,000 feet. The change made herein affects only the sloping surface in that it starts at a greater distance outward from the runway.

* Consideration to aeronautical facilities not in existence at the time of the filing of the application for radio facilities will be given only when reasonable notice of proposed airport construction or improvement plans are on file with the CAA as of the filing date of the application for such radio facilities. All runway lengths used in the criteria are basic runway lengths for sea level sites under standard atmospheric conditions.

(b) *Approach Areas (JIGTSC)—Other than Instrument Runway*

(1) *Length:* Length of approach area shall be as presently defined in FCC Part 17.

(2) *Slope:* The slope of the approach area surface shall be 40:1 for Large, Small, and Personal airports.

(3) *Width:* The width of the approach area shall be 500 feet at the end adjacent to the runway and 2,500 feet at the outward, or approach end. This shall apply to Large, Small and Personal airports.

NOTE: When application of the various criteria results in two or more surfaces intersecting, then the lower surface shall be considered as the significant surface for aeronautical study.

(c) *Circular Area extending outward from Airport Reference Point*

The surfaces established herein shall replace the horizontal and conical surfaces presently defined in FCC Part 17, and shall have the following dimensions:

(1) A *horizontal* surface, circular in shape, with its height 150 feet above the airport elevation and having a radius from the airport reference point as follows:

a) For Large airports—2½ miles (13,200′)
b) For Small airports—1½ miles (7,920′)
c) For Personal airports—1½ miles (7,920′)

(2) An *inner conical* surface extending upward and outward from the periphery of the horizontal surface and having a slope of 40:1 for large and small airports, and 30:1 for personal airports. Measured radially outward from the periphery of the horizontal surface, the inner conical surface shall extend for a horizontal distance as follows:

a) For Large airports—2½ miles (13,200′)
b) For Small airports—1½ miles (7,920′)
c) For Personal airports—2 miles (10,560′)

NOTE: The airport traffic pattern is considered to be within the area of 5 miles radius of large, and 3 miles for small and personal airports.

(3) An *outer conical* surface extending outward and upward from the periphery of the inner conical surface and having a slope of 100:1 for large and small airports, and 50:1 for personal airports. Measured radially outward from the periphery of the inner conical surface, the outer conical surface shall extend for a horizontal distance as follows:

a) For Large airports—10 miles (52,800′)
b) For Small airports—2 miles (10,560′)
c) For Personal airports—1½ miles (7,920′)

3. *Approach and Landing Minimums*
Various criteria are employed in the

establishment of initial approach altitudes, altitude over the facility on final approach, for holding and procedure turns and landing minima. The base for the establishment of these values is the height of critical obstructions, including terrain within certain defined areas. Surfaces presently defined in FCC Part 17, together with the surfaces established or modified by the preceding criteria will serve to set the requirement for aeronautical study of any proposed antenna structure that may have an adverse effect on the above minima.

B. PROTECTION OF AREAS IN THE VICINITY OF MILITARY AND JOINT-USE AIRPORTS

1. *Obstructions 500 Feet and Under*

That portion of the criteria in Section "A" which affects obstructions over 500 feet applies only to public-use civil airports. The criteria for military and joint-use airports are contained in AFR-86-3 and BUAER-11012.1. Whenever these criteria overlap due to proximity of airports, the more restrictive criteria will apply in the overlapping portion of airspace.

C. PROTECTION FOR AREAS IN THE VICINITY OF HELIPORTS

Cognizance must be given to the operating characteristics of rotor-wing aircraft and to the requirements of aircraft with comparable operating characteristics with respect to the development and establishment of landing areas and routes which, insofar as civil operations are concerned, will normally be in built-up areas of dense population.

1. *Heliports*

A conical surface extending upward and outward to a horizontal distance of 4,000 feet from the edge of the existing or proposed heliport and having a slope of 20:1. Exceptions to the 20:1 slope may be made when proposed antenna construction is shielded by existing structures or obstructions of a permanent nature. For the purposes of these criteria, the edge of a heliport is considered to be 500 feet from its center, or the edge of the existing or planned* heliport, if the latter is greater than 500 feet from its center and shown on local aeronautical charts.

NOTE: Because of the early developmental stage of helicopter operations, no helicopter airways or flyways have been established. However, future needs for helicopter airways or flyways should be considered in analyzing the location and height of antenna structures.

D. PROTECTION OF FEDERAL AIRWAYS TRAFFIC

1. *On Airways*

Unless adequately shielded by terrain or existing man-made structures, any proposal for new construction extending over 500 feet in height above ground, and located within the limits of designated civil airways or routes (5 miles each side of the center line) must be thoroughly weighed to determine whether or not such a tower would represent a hazard to air navigation.

2. *Adjacent to Airways*

In considering safety of flight along airways, the location and height of structures immediately adjacent to an airway are considered to offer a potential hazard to flight to a degree related to the longitudinal distance from the radio navigational aid, and lateral distance from the boundary of the airway. Structures which extend through the following-described planes adjacent to airways will be considered hazardous to air navigation, unless shielded by terrain or existing man-made structures, or approved by special aeronautical study.

a) *Starting at a point 25 miles beyond the air navigation facility* along the outer edges and 500 feet above the ground of an airway or route extending outward and upward at a slope of 50:1 right angles to the airway for a horizontal distance of 5 miles each side of the airway.

b) *Within 25 miles of a NAV Aid:* This portion of the off-airway boundary narrows down to the width of the airway (10 miles) at a point right angles to the navigational aid.

3. In addition to the above, consideration shall be given to the following:

a) Cardinal altitudes (i.e., 1,000 feet; 2,000 feet; 3,000 feet etc.) as presently established will not normally be modified to a noncardinal figure (e.g. 1,200 feet; 1,500 feet; 2,400 feet; 2,900 feet).

b) Existing minimum en route altitudes, established at 1500 feet MSL, will not normally be altered upward. (This will be particularly true in coastal dense traffic areas.)

c) Certain airways will be protected below the present established "Minimum En Route Altitude" where planning information indicates a requirement which may be satisfied by an additional VOR or through provision of DME or other aids.

d) The degree of change which may be tolerated for non-cardinal altitudes is dependent on factors, such as (a) density of en route and terminal air traffic, (b) prevailing weather conditions, (c) terrain, and a number of others. It is not believed practicable to establish a mechanical formula for application to this problem.

e) As a general rule civil airways extend on direct lines between adjacent air navigation radio aids. For air traffic control reasons, or to facilitate other operational advantages, airways are sometimes aligned to other than a direct routing. Where moving an airway could be accomplished without unreasonable penalty to aviation, to accommodate tall structures justified as a public need, such action may be taken.

E. PROTECTION OF LOW ALTITUDE INTER-CITY ROUTES

There are a few closely spaced large and medium size cities which generate a considerable amount of inter-city low level traffic (such as Dallas-Fort Worth, San Francisco-Oakland, and Winston Salem-Raleigh) where it is necessary to keep the lower altitudes below the minimum en route airway altitude relatively free of obstructions in such areas to permit maximum flexibility in handling of air traffic. In other instances, the existence of a reasonably low MEA will often eliminate the necessity of inter-city instrument flight, by permiting flight underneath cloud levels. The following general procedures will be followed in aeronautical study of structures in these areas:

1. The minimum authorized altitude between closely spaced cities having substantial inter-city traffic will not normally be increased.

2. Structures extending over 500 feet above the ground should not be located within five miles of a direct line between two closely spaced airports where CAA has authorized or indicates plans for authorization of special low altitude inter-city aircraft operation to expedite aircraft operations.

F. PROTECTION OF FLYWAYS AND MILITARY CORRIDORS

1. There are some areas, particularly in deserts, forests, large swamps or mountainous country, where aircraft operating VFR are normally flown around large areas where emergency landings would be difficult, or down valleys, along rivers, through canyons, etc., at relatively low level to avoid hazardous terrain. Where this type of operation is relatively large, the routes flown are termed "Flyways." Airway radio aids are often utilized for weather information on these "Flyways," but not necessarily for air navigation. Where traffic on these "Flyways" is substantial and they are shown on aeronautical charts, specific aeronautical study shall be given to applications for towers over 170 feet above ground within five miles of the normal center line of these routes.

2. The general criteria for Federal Airways shall be applied to established military corridors in which low-level flight operations are required for military and Coast Guard Air Stations. These corridors will normally be ten statute miles in width, extending from the stations to the coastal areas or between two military installations.

G. PROVISION OF "FARM AREAS" FOR THE ERECTION OF RADIO AND TELEVISION TOWERS

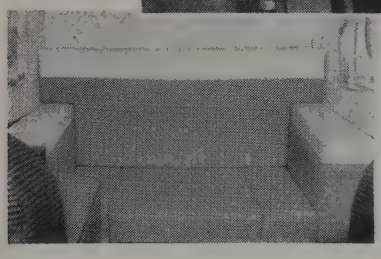
The above criteria are adopted with the understanding that "farm areas" (an antenna "farm" is an area where antenna towers having a common impact on aviation may be grouped) will be established in every community. In the establishment of the height of towers in these "farm areas," aviation interests will compromise their needs to the fullest possible in order to provide the tower heights required to deliver the maximum service to the public. To meet this objective, the above-noted criteria (JIGTSC, AFR-86-3 and BUAER 11012.1) will not apply.

More than two years of meetings between aviation interests and broadcasters were necessary before the detailed memorandum was accepted by all parties concerned. +++

Cair announces...

the PAGAN

Brilliant new Beechcraft D-18-S modernization offers special advantages for business flying



Creative engineering and design have advanced the Pagan beyond the ordinary concept of executive conversion. Increased power, speed and payload. Greater comfort, convenience and more attractive appearance. The Pagan is a high-performance executive transport offering more of everything you want in a business airplane today.

Useful load capacity, for example, is increased to approximately 2750 lbs. That's about 525 lbs. over standard "D" models! The Pagan's 3-blade propellers, power plant improvements, sleek new wing tips, tail gear door and many other modern features add to all-around higher performance and utility. Wing fuel tanks free space for radar.

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The Comanche-Report

(Continued from page 15)

the center of the instrument panel, adjacent to the throttle, an arrangement like that in the Piper Tri-Pacer. My experience with a "hand brake" was limited to the DeHavilland Chipmunk. Being accustomed to toe brakes on the rudder pedals, I felt the hand brake a bit awkward.

The take-off run was smooth, and the trim craft started to get light-footed at 65 mph. Once airborne, a flick of the pilot's hand, and the gear was on its way up. A very easy to operate lever, just about centered on the panel, controls the gear position. On the floor, a red-knobbed "arm" follows through the movement of the gear, as it goes up or down. This "arm" is also the emergency gear lever in the event the hydraulic system fails.

Climbing at 95 mph, the plane rises in a startling nose-high position. At Zahn Airport we added CAA Safety Agent, C. H. Rothenberger, and airport owner-operator, Ed Lyons. Lyons took the controls for his first time in the plane. I took a back seat with Rothenberger and enjoyed discovering the cabin design with long legs in mind. At the side of each seat, immediately above the arm rest, is a new multi-position air vent so that each seat occupant may adjust his own air intake.

Even with four persons aboard, the Comanche took to the sky as swiftly as an arrow shot by a member of the plane's namesake tribe of Indians.

Our next stop after dropping our passengers was Bradley Field at Windsor Locks, Conn. This time it was my turn at the controls.

I had planned to put to use the old "CIGFTPR" cockpit check list and had been refreshing my memory with "controls, instruments, gas, flaps, trim, prop and radio" and the landing "GUMP" procedure of "gas, undercarriage, mixture and prop." Then abruptly I was saved from memory work when a very concise check-list mounted on the center post in front of the flap handle was pointed out to me. This list even included locking the door, the only one on the plane, which has a separate lock at the top right corner where it would be impossible to inadvertently un-lock and open the door.

Taxiing with the hand-brake as my only means of stopping didn't prove quite as awkward as I had assumed it would be. However, I found myself pushing on the rudder pedals rather fruitlessly but out of habit. I asked Strohmeier if this hand-brake system presented any problem. It occurred to me that to taxi in a strong cross-wind the pilot might need three hands . . . to hold an aileron into the wind, to hold the brake handle and to operate the throttle.

He said that with the low-wing cross-wind was not a problem. Further, he added, the hand-brake applies an even pressure to both wheels at the same time thereby preventing excessive wear on either wheel or tire individually.

At the end of the runway I set the parking brake and ran the 180 hp. Lycoming up to 1700 rpm, checked the "mags," the carburetor heat, the propeller, then throttled back to idle while I checked the stabilator trim tab (on the ceiling between the two pilots' heads) for neutral position and the rudder trim (in front of the right seat) for full right position.

We rolled on to the runway after clearing the area for other aircraft. Easing the throttle full-on, I felt the Comanche skoot down the runway. At 65 mph Strohmeier held up his hand beckoning me with his fingers to ease back on the wheel. As I did so, we became airborne. I flicked the gear switch up and then started to spin the propeller pitch control knob until it read 2500 rpm, normal setting for climb. Before I had completed this action, the gear light indicated "up and locked," and this was substantiated by the position of the lever on the floor.

In spite of my unfamiliar hand on the controls, the Comanche moved out and up with a grace all her own. We climbed to 7,000 feet (plane's best performance altitude is 7,000-8,000 feet) to experiment with airspeed. At 2150 rpm and 142 mph IAS, our TAS was 158 mph; at 2300 rpm with 146 mph IAS, TAS was 162 mph; and at 2400 rpm, 148 mph IAS, the TAS was 164 mph.

Before making my first Comanche landing at Bradley Field, I tried a power-on stall and a couple of turns, left and right. The stall was positive. From a very nose high attitude, during which the Comanche first indicated a 3,000 fpm rate of climb, the airspeed began to drop off slowly, steadily. When the critical moment came, the nose dropped abruptly, but I didn't detect and onesidedness about it and was able to catch it with power with the nose just below the horizon. With gear and flaps down at 80 mph the Comanche performed well in shallow turns. There was a solid responsive feel to the controls.

Tuned in to the Bradley Field control tower, I called for landing instructions.

I identified us as "Comanche 5000 Papa." Response was "Apache 5000 Papa." I repeated "Comanche." The controller made the correction admitting that this was the first Comanche with which he'd talked. With landing instructions in mind, we dropped down to pattern altitude slowing the plane to 120 mph before lowering the gear (125 mph is maximum). As soon as the manifold pressure is reduced to ten inches, a horn starts blowing that won't quit until the gear is lowered or more power is added.

With little help from me the Comanche sort of landed itself . . . tricycle gear does make it difficult to make a really bad landing. On the ground the tower operator had us switch to the ground control communications channel for taxi instructions. First remark was that this was the first Comanche they'd seen. Second remark was did all Comanches come equipped with blond pilots. Strohmeier joked that "it's standard equipment."

After lunch at the airport restaurant we climbed aboard the plane again. In a straight skirt the first step up onto the wing could be lower. Already I was beginning to feel "at home" in the Comanche . . . in spite of the hand brake.

The plane seemed to do a better job of taking off this time, and I put it on a southerly heading toward New Haven, Conn., where I was to shoot some "circuits and bumps." It was a lovely sunny, clear day, but rough. We bounced on down to New Haven and announced our forthcoming arrival over the Unicom.

With full flaps the plane noses gently down . . . another unique item . . . no fevered rolling of trim tab when the nose starts up at the application of flaps. With the flap handle in the full position (there are three positions—9, 18 and 27 degrees) I held 100 mph with power and floated to a landing. Strohmeier pointed out that 90 mph would negate, or at least reduce, the floating. I tried again. The 90 mph was fine. I discovered, also, that when I thought I had plenty of altitude to come in without power, I had been mislead. The Comanche comes right on down even without flaps.

After the second trip around the pattern Strohmeier got out. Before I could move out of my seat he looked at his watch, 3:15, and said to me "go play by yourself and pick me up at 4:00."

The Comanche took off and climbed like an arrow pointed high with a 100-pound bow behind it. Feeling smug at being alone with the Comanche, I left the pattern and found a reasonably straight railroad track and tried a few Lazy-Eights. After that, some 720-degree steep turns and slow flight at 65 mph with full flaps and gear extended.

The Lazy-Eights went smoothly with 70 mph at the top and 140 mph at the bottom of the loops. The steep turns at a 60-degree-angle-of-bank had me working to maintain altitude the first two attempts. After that, the Comanche was practically doing the turns by herself. At 65 mph-slow flight I did turns in both directions and, although the plane responded, I didn't feel like trying turns at any lower speed.

Reluctantly, I headed back to New Haven to pick up Strohmeier for the last leg of our day's flight. Heading toward New York City, we flew along the shoreline at 1500 feet altitude. Connecticut was all shades of red and gold in the late afternoon sun light.

Back at Flushing, we entered the airport's right-hand pattern. This time the Comanche landed just as smoothly as she knew how. Similarly, the Comanche is going to offer smooth but rugged . . . it's stressed at 7.5 Gs . . . competition to the single-engine, four-place light-plane market.

ROCHESTER TIMES-UNION
Wed., Sept. 18, 1957

Airlines Rush for Radar

Safety Devices Become Sales Factor

WASHINGTON (LP) — About 40 per cent of the nation's commercial airlines now are equipped with airborne radar—aviation's answer to the thunderstorm menace.

The airlines literally are racing to install these 150-pound boxes of electronic wizardry on their planes. For radar has become a boon to sales as well as safety.

"People are beginning to ask for seats on radar-equipped planes," one high airline official said. "The public is becoming very much aware of what radar can mean to comfort and safety." . . . . It also shows the paths of least turbulence.

TO PASSENGERS, airborne radar merely means a smoother flight.

But to pilots it means the avoidance of thunderstorm turbulence which has been known to tear a giant airliner apart.

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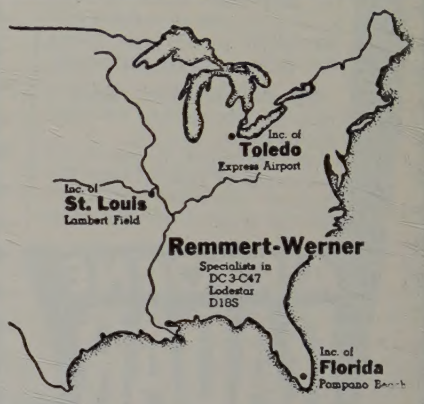

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Correction On San Jose Airport Control Tower Report

Control tower at San Jose Municipal Airport, Calif., is not yet in operation, writes J. D. Harper, airport operations assistant. It was reported in the October Skyways' that the facility was in operation. Harper adds that, tentatively, the tower will go into operation this month. He points out that the CAA has changed the frequencies from those listed in the earlier article to those listed below.

The San Jose Control Zone will be in effect when the tower is commissioned, writes Harper. The tower will receive on 122.5 but will not transmit on that frequency. Also, the low frequency transmitter will be 287 KC.

Transmitting	*Receiving*	*Use*
287 KC	3023.5	Low Frequency
119.9 MC	119.9 MC	Primary Air Freq.
121.7 MC	121.7 MC	Ground Freq.
121.5 MC	121.5 MC	Civil Emergency
243.0 MC	243.0 MC	Military Emergency
257.8 MC	257.8 MC	Military VHF
348.6 MC	348.6 MC	Military
	122.5 MC	Civil Freq.

San Jose T.V.O.R. 108.2

Turbo-Prop Version Of DC-3 Produced By Handley Page

A Dart-powered version of the DC-3, or Herald, due to fly early next year, will have a cruise speed of 278 mph, according to the Handley Page Ltd. aircraft firm of London, England.

The turbo-prop version is the result of a recent United States CAA survey which disclosed that 20% of present planes in air carrier service is the DC-3.

The DC-3 Herald will carry 43 passengers in a pressurized cabin, or four-and-one-half tons of freight. It is designed to cruise at 278 mph at 17,400 feet over a distance of 700 miles with full payload.

One of the most attractive features of the turbo-prop Herald is its short take-off and landing performance, says Handley Page.

The engine is the Dart R.Da.7 with 2,105 ehp. A price of nearly $500,000 includes furnishings. Operating costs of less than one-and-one-half cents per passenger-mile and 16 cents per ton-mile, are quoted.

Radar Departure Control Terminology

Towers where radar departure control is used to request aircraft to "contact departure control on (*blank*) frequency." This message is given soon after takeoff and many times before aircraft crosses the fence. Contacts with tower personnel and examination of radar manual has establishing fact that *contact within one mile of the airport for identification and control purposes* is the requirement. No other urgency is intended. We understand that at times the message is interpreted to mean *make immediate contact with departure control after takeoff*. This interpretation is *not* intended.—ALPA—Technical Talk for Pilots

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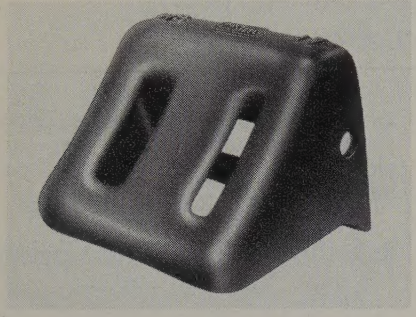
NU-AVI-QUIP

Calumet Wheel Chock For All Planes

A wheel chock for small aircraft and nose wheels of larger craft is manufactured by Calumet Steel Castings Corp., 1636 Summer St., Hammond, Ind.

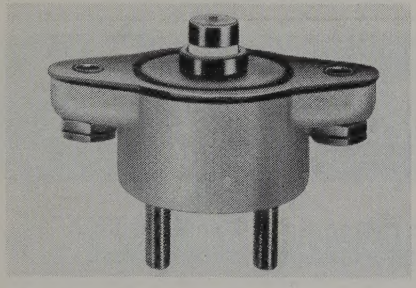
Features of the item include positive gripping self-sharpening calks, minimum pavement engaging surfaces to prevent freeze-up, compact design with well-rounded corners and light weight. It is manufactured of high-strength cast steel and is almost indestructable.



Circuit Breaker Shows Trip-Outs

An improved high altitude, manual reset, aircraft circuit breaker (KLIXON C6758), designed to indicate when trip-outs occur, is available from Spencer Thermostat Div., Metals and Controls Corp., Attleboro, Mass. Ratings are from 50 to 105 amps for 30 VDC and many 110-220VAC circuits.

The circuit breaker also has ground uses, furnishing circuit protection in such applications as automotive systems and stationary engine-driven power plants.



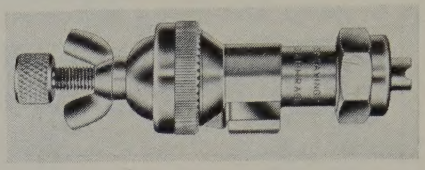
Diaphragm TeeJet Nozzle With Manual Shut-Off

For airplane spraying, the new Diaphragm TeeJet Nozzle with Shut-off Assembly eliminates the need of removing orifice tips and inserting blanks.

To shut off any nozzle with the unit, the shut-off screw is merely turned down, closing the internal nozzle inlet, and is held in place by means of the wing nut. The wing nut also holds the control screw in complete open position while spraying.

The diaphragm used on the nozzle operates as that on a standard diaphragm nozzle to eliminate dripping once a line has been shut off during spraying.

It is supplied in brass with monel metal internal strainer screen. Manufacturer is Spraying Systems Co., Bellwood, Ill.



AC Power Timing Light Stays Cool

A new improved AC power timing light known as the Herbrand HT0670, is produced by the Herbrand Div., Bingham-Herbrand Corp., Fremont, O.

The light is equipped with a totally new circuit which the firm claims will stay cool after long hours of continuous operation and will not bake or burn out. A bright, narrow beam for pinpointing the timing mark is supplied by a long-burning xenon stroboscopic lamp.

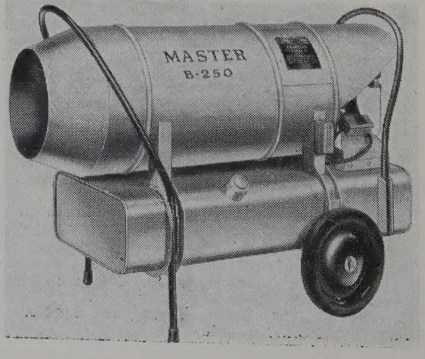
Requiring only two connections and a 110-volt power source, it will check 6, 12, 24 and 48 volts and magneto. The case, designed for use in cramped quarters, is light weight, precision-balanced and shock-proof. The Herbrand HT-670 is guaranteed unconditionally by the manufacturer for one year.

Portable Heater For Cold Weather

A portable heater that delivers 250,000 BTUs of heat per hour has been added to the line of Master Portable Heaters. Designation is B-250.

It is ideal for all kinds of spot heating, indoors or outside.

The heater will run for 16 hours on one tank of kerosene or fuel oil. It is free from fumes, and will not "oil up" plastered or painted surfaces. It has a thermostat control and operates on 115 volt AC outlet. Firm claims that even if the fuel burns out there is no damage to the engine.



General News

General Aviation Planes Increase

Number of planes used in general aviation continues to increase throughout the United States according to a study by the Civil Aeronautics Administration.

Multi-engine planes used in general aviation increased from 3,342 January, 1956, to 4,183 at the start of 1957, an increase of 25%. Single-engine postwar planes carrying four or more passengers totaled 22,805 at the start of 1957, an increase of 19% over last year. During 1956, U.S. manufacturers produced 4,758 single-engine planes, 60% more than they produced the year before.

The study, made annually and called "U.S. Active Civil Aircraft by State and County," presents a comprehensive picture of aircraft population. Active aircraft in each county and state are listed and divided into four groups; scheduled and irregular air carriers (a total of 1,802 planes); multi-engine general aviation aircraft; postwar, four-place-and-more with single-engine; and all other single-engine models.

Planes still are more numerous per 1,000 population in states where there are wide open spaces and long distances, but few people. In five states there is an ownership density of less than 1,000 persons per plane. They are Montana, 696; Nevada, 861; Wyoming, 879; South Dakota, 929, and Idaho, 967.

In the number of planes per thousand square miles of area, the top ranking states are New Jersey, Massachuetts, Rhode Island, Connecticut and Delaware. California residents lead in plane ownership with 7,420; followed by Texas with 5,268; Illinois, 3,669; New York, 3,059; and Ohio, 3,054.

The informative booklet is available from the Department of Commerce for one dollar.

San Francisco Radio Range To Be Cut

The San Francisco, Calif., MRL Radio Range is to be discontinued in the near future. The range no longer provides any IFR service that cannot be provided by either L/MF aids or by ILS/VOR in the San Francisco Bay area. From a communications and weather broadcast standpoint, service will be provided by the Oakland ATCS through the Oakland SRA.

Oil Firm Takes Delivery Of Trecker Amphibian

Ferrell N. Roberts, aviation superintendent for Pan American Petroleum Corp., Tulsa, Okla., has taken delivery of the firm's first supercharged Trecker Amphibian.

The plane, latest addition to Pan American's business and utility fleet, will be used to service the Gulf-coast locations of Pan American's Texas-Louisiana Gulf Coast Division.

The supercharged Trecker Amphibian P.136-L2, was formerly known as the Royal Gull.